AEQ

Audio, Video and Communications for Broadcasters

AEQ REFERENCES

SPORTS AND LARGE BROADCAST EVENTS

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SPORTS AND OTHER LARGE BROADCAST EVENTS

At the following major events, we have undertaken the supply and/or the Installation, engineering and operation of equipment for Transmission, Venue inter- connection or -communication purposes, Unilateral Commentary Signals, Commentary Positions, Audio Distribution and Commentary Switching Facilities;

Last updated: June 2023

BROADCAST SOLUTIONS DELIVERS VIDEO ASSISTANT REFEREE VAN WITH AEQ INTERCOM SYSTEM, TO THE ASSOCIATION OF FOOTBALL FEDERATIONS OF AZERBAIJAN (AFFA)

Over the last years, Video Assistant Referee (VAR) systems has become a very popular solution for many football federations all around the world. More and more leagues and associations are delploying VAR systems to ensure more fair play and acurate refereeing decisions. The Association of Football Federations of Azerbaijan (AFFA) understood the advantages of this solution and decided to implement a VAR system in 2022 designed and delivered by Broadcast Solutions.

The initial system consists of three Video Assistant Referee Video Operation Rooms (VAR-VOR) permanently installed in the stadium in Baku, completed by a mobile VAR system in a 3.5t transporter. Recently, Broadcast Solutions has delivered another mobile VAR unit to AFFA.

By deployinh the project's first phase, the AFFA (Association of Football Federations of Azerbaijan) has been officially certified by FIFA VAR.

The combination of a fixed VAR-VOR solution and a mobile VAR system became necessary to connect venues that are too far away from the VAR hub in Baku or do not have a dedicated fibre optic connection to the nationwide VAR system. AFFA can now be even more flexible in meeting the league's requirements with the second mobile VAR system.

Elkhan Samadov, President of the Azerbaijan Professional Football League, said: "We are pleased to have even more VAR systems at our disposal to ensure that all future matches are conducted as fairly and comprehensibly as possible."

The VAR van, now handed over to AFFA, has been realised as a van with a total weight less than 3.5 tonnes, in order to ensure unrestricted driving availability. Three workstations are available in the van for a video referee, a video referee assistant and a replay operator.

Furthermore, the "Review Area" system consisting of a flight case, monitors, an AEQ TP8116 Intercom user panel and a stage box, which is placed on the sidelines of the football ground. With this solution, the referee is able to review certain scenes and also communicate with the video referee in the van.

AEQ equipment is installed in both locations to distribute the audio signals and intercom communications.

The equipment in the OBVan consists of an AEQ CrossNET intercom matrix and three AEQ TP8116 intercom user panels.

CrossNET is a compact, one rack unit high intercom matrix with basic IP connectivity, based on Dante™ technology, compatible with the AES67 standard, carrying high-quality audio suitable for broadcast. It also has high-quality balanced analog audio inputs and outputs.

In each room, three AEQ TP8116 intercom user panels have been installed. These are 1UR User panels with 16 programmable keys on 4 different pages. They have individual volume control for each communication crosspoint, DSP and ECO canceller. Apart from these features, TP8116 panels offer by default dual AoIP Dante / AES67 port, a VoIP port, a Digital port and an analog port. Each panel has 2 graphic displays, with the possibility of up to two lines of text for each key, a third line indicating the audio level at the crossing point.

The replay operator uses EVS' Xeebra multi-camera review system, which is equipped with AI technology to automatically calibrate the field of play and create a real-time virtual offside line (VOL). The EVS Xeebra system is provided to process up to eight video signals per match.

For the routing solution, both partners opted for KUMO systems from AJA. Radio systems with headsets from Vokkero are used for communication between the referees on the field and the video referees.

HUGE DEPLOYMENT OF AEQ INTERCOM SYSTEM AT RECENT GAMERGY 2022 AT IFEMA MADRID

GAMERGY is the most important and spectacular gamer meeting in Spain, with a great projection and repercussion in the video game community. GAMERGY 2022 was a key meeting for all gamers, fans of the world of video games and the online world, for its clear vocation to turn this space (real and virtual) into an area of interest also for companies, institutions and other initiatives that share and develop the activity in the national and international market. In this way, GAMERGY has become among all participants, attendees and players the most important event of the year for this form of gamer life, which is held every year at the IFEMA exhibition centre in Madrid at the end of the year.

For such a massive event as GAMERGY 2022, the company selected to be in charge of all the audiovisual part, vital in such a show, was Fluge due to its technical capacity and great prestige in the market. The technical managers of Fluge Audiovisuales decided to confirm all the Intercom and private communications system to AEQ technology, as well as the assembly and technical support of operation also to AEQ personnel present in all the phases of installation, previous start-up, and of course in all the days of GAMERGY 2022.
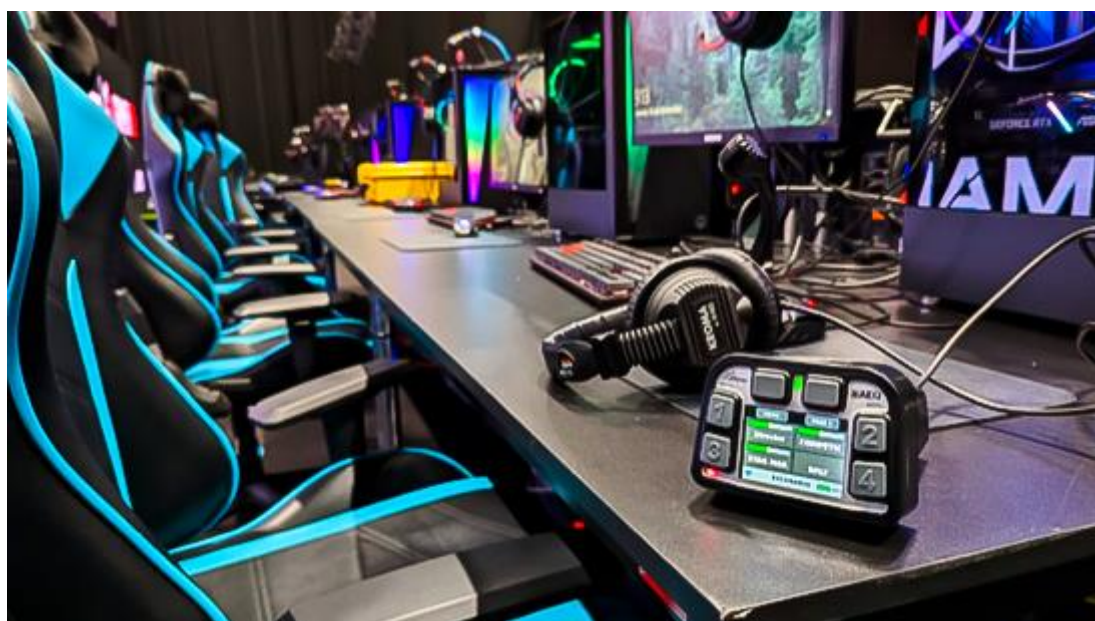
AEQ's rental division prepared for the event two complete intercom systems for the coordination of the production of different gaming events on the two independent stages set up for the event. In addition, a commentary unit for casters was also integrated, which provided the audio production.

Each Intercom system is located in the production control (control room) of a stage. The largest Intercom system and commentary unit is located on stage 2 in hall 6. This hall has a main stage, called stage 1, and stage 2 or secondary stage. In addition, there is also the food-trucks and canteen area. The other Intercom system is installed on Stage 3, which is located in Hall 4 of IFEMA.

For the operation of stage 2, there was initially a configuration of 10 user panels and 6 wireless beltpacks, plus a commentary unit.

The system chosen was AEQ CROSSNET to have AoIP integration with Dante technology and other external audio sources. The wireless part consists of AEQ XPLORER beltpacks, initially estimating a couple of access points to cover the whole area needed. The beltpacks support 3 cameras, a ruler, a stage combat controller and an auxiliary.

Finally for the commentators an AEQ OLYMPIA3 digital position is used, which is also connected via Dante to the matrix. The use of IP technology throughout the assembly simplified the wiring tasks, minimised the previous hours of installation, and allowed us to offer great versatility in the operation, with infinite changes in real time to adapt to a production as agile and dynamic as the live broadcasting of video game games requires.

Meanwhile, on stage 3 at IFEMA, a slightly smaller system is deployed, where 7 panels and 3 wireless beltpacks are needed, also to a system with AEQ CROSSNET matrix.

The whole project has been coordinated by AEQ's sales manager Mr Eduardo Guerrero together with the company's product manager Mr Roberto Tejero, in collaboration with the technical services of Fluge Audiovisuales.

ISB COVER THE UIPM 2022 LASER RUN WORLD CHAMPIONSHIPS LISBON, PORTUGAL

From the 22 th to 25th of September 2022 took place in Lisbon the pentathlon event, UIPM 2022 laser run world championships. The production company INTERNATIONAL SPORTS BROADCASTING (ISB) deploy Olympia 3 AoIP Commentary Units.

AEQ PHOENIX ALIO AUDIOCODECS AT EUROBASKET 2022

Phoenix Alio audiocodecs were selected by integrator Mediapro for the XLI Men's European Basketball Championship or EuroBasket 2022 (Germany, the Czech Republic, Georgia and Italy from 1st to 18th September 2022). The event was organised by the European Basketball Confederation (FIBA Europe) and the basketball federations of the host countries.

Initially, the championship was to be held in September 2021, but due to the COVID-19 pandemic and the postponement of the Olympic tournament, the date was rescheduled to September 2022. A total of twenty-four national teams affiliated to FIBA Europe competed for the title of European champion for 4 weeks until the final victory of the Spanish team.

In an event of this level, with such important technical requirements in terms of video and audio, Mediapro selected AEQ technology for all the commentator positions in the stadiums they managed, using AEQ ALIO IP audiocodec.

AEQ ALIO is a portable IP audiocodec with dual stereo channels. It has been designed specifically for sports broadcasting, but has been optimised to make it easy to use in a wide variety of scenarios, including music events. Its compact design, resistant to pressure, shock, and even liquids, is optimised for outdoor use where treatment cannot always be sufficiently gentle.

Portable AEQ ALIO can connect to rackmounted equipments from most manufacturers via the SIP communication protocol, in accordance with EBU standard N ACIP Tech 3326. But if you connect with an AEQ codec you can use a unique set of tools to support communication and control of the unit. In addition, with the AEQ ControlPhoenix Audiocodec Management Software you have full control of the unit and all its functions.

2022 INTERNATIONAL SPORTS BROADCASTING - ISB RELIES ON INTERCOMS AND COMMENTARY KIT FROM AEQ FOR THE PRODUCTION OF THE 2022 WORLD GAMES IN BIRMINGHAM, AL.

The 11th edition of The World Games took place in Birmingham, Alabama, USA between July 7 and 17, 2022 and was originally planned for 2021 but postponed to 2022 due to the COVID-19 pandemic. This multi-sport games gathered around 3,600 athletes from over 100 countries.

The production company ISB produced the television signal and were also in charge for selling the worldwide broadcasting rights. Close cooperation with the Olympic Channel also ensured that stories of the Games were transmitted to all parts of the world.

ISB deployed AEQ's AoIP CrossNet Intercom System for the technical coordination and for the Commentary Audio a combination of the AEQ Olympia 3 AoIP Commentary Units and portable IP AudioCodecs Phoenix ALIO were used. Additionally the Olympic Channel in Madrid were using the AEQ VENUS 3 IP Codecs with local AoIP for the commentary program audio and coordination with commentators in Birmingham. Among the federations with their proper commentary, The World Flying Disc Federation opted for the AEQ TALENT compact IP Codec for their Commentary and production coordination.

2022 AEQ TECHNOLOGY IN FIFA CLUB WORLD CUP UAE 2021

PHOENIX VENUS 3 AND ALIO AUDIOCODECS, AS WELL AS OLYMPIA3 COMMENTARY UNITS, WERE SELECTED FOR THE EVENT.

During February 2022, the Club World Cup organized by FIFA was held in Abu Dhabi. This year the invited teams were Palmeiras from Brazil as winner of the Copa Libertadores, English Chelsea, as winner of the Champions League, Al Hilal from Saudi Arabia as winner of the last AFC Champions League, the Egyptian team Al Ahly, winner of the CAF Champions League, as well as Monterrey from Mexico after their victory in the CONCACAF Champions League, and finally AS Pirae from Tahiti nominated by the OFC.

In 12 days, 8 match are held to determine which is the best club among the best, with eliminatory crosses that led to a great final between Chelsea and Palmeiras, where the English team prevailed to finally lift a new title in its already impressive palmares.

In an event of this level, with the important technical requirements that covers both the video and audio level, event organizers selected, through Mediapro, AEQ technology for all the commentary positions, of the two stadiums where the matches of this competition.

Mediapro is one of the world's leading producers of content for film and television, sports rights management, audiovisual services and other associated services, which manages the rights of the largest football championships.

AEQ supplied 28 units of its ALIO audiocodec for the occasion, as well as AEQ OLYMPIA3 commentary units working together with AEQ VENUS3 audiocodecs as reserve equipment.

AEQ ALIO is a dual stereo channel portable IP audio codec. It has been specifically designed for sports broadcasts but has been optimized to make it easy to use in the most varied scenarios, including music events. Its design, compact, and resistant to pressure, shock, and even liquids, is optimized for use outdoors where treatment cannot always be sufficiently careful.

AEQ ALIO can connect to base units from most manufacturers through the SIP communication protocol, in accordance with the EBU standard N ACIP Tech 3326. But if you connect with an AEQ audiocodec you can use an exclusive set of tools to help you communicate and control the unit. In addition, with the AEQ ControlPhoenix AudioCodecs Management Software, you have total control of all its functions.

Obviously, a group of technicians and engineers traveled from AEQ Spain HQ to collaborate with those from Mediapro, to support the operation of all this equipment, during the more than two weeks of preparation, deployment, configuration and use of the system.

OLYMPIC WINTER GAMES, BEIJING 2022, CHINA

377 AEQ OLYMPIA COMMENTARY UNITS SERVICING COMENTATORS AT THE 17 OLYMPIC VENUES

The 2022 Winter Olympics, officially called the XXIV Olympic Winter Games and commonly known as Beijing 2022 was an international winter multi-sport event held between 4 and 20 February 2022 in Beijing, China, and surrounding areas with competition in selected events beginning 2 February 2022.
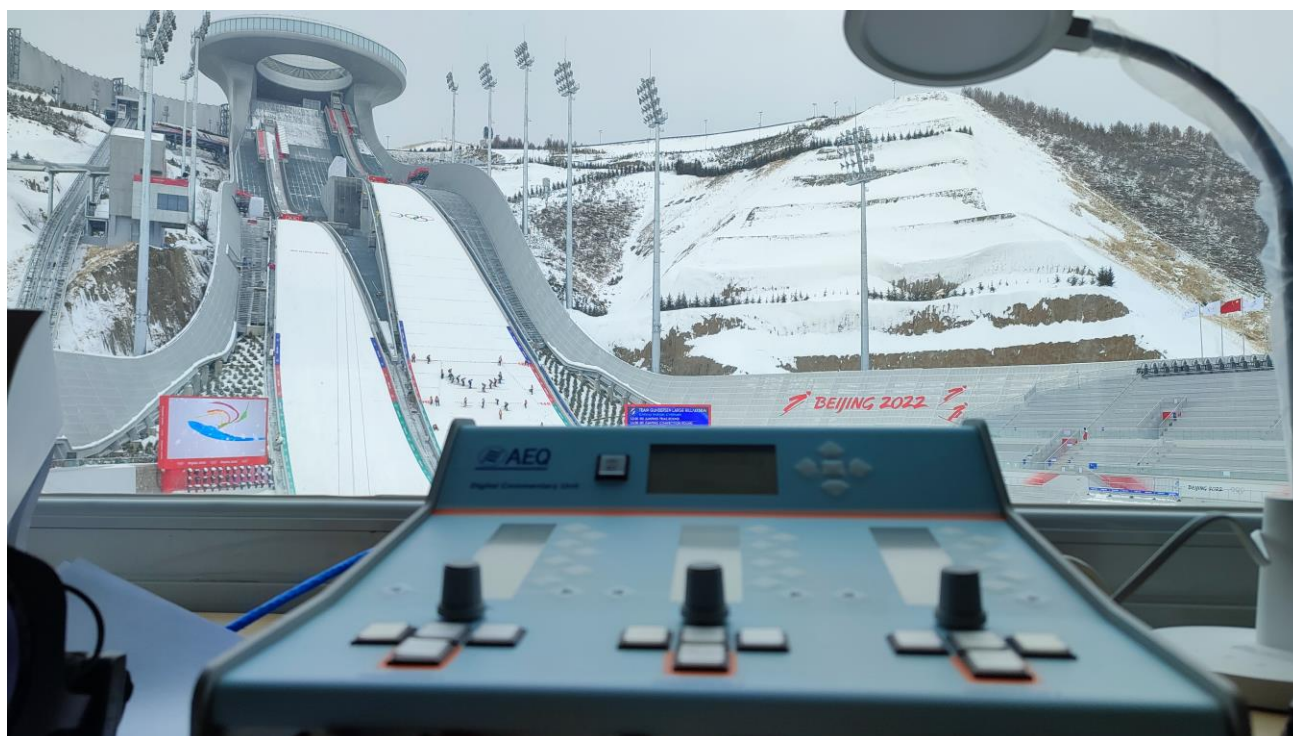
The Games featured a record 109 events across 15 disciplines, with big air freestyle skiing and women's Monbob making their Olympic debuts as medal events, as well as several new mixed competitions. A total of 2,871 athletes representing 91 teams competed in the Games.

The Host Broadcasting Organisation deployed the AEQ Commentary System for the fourth time at a Winter Game and it consisted in 377 AEQ Olympia Commentary Units installed in the 17 Olympic venues. These units were connected to the AEQ BC 2000D router centralizations in the CCR (Commentary Control Room) at each venue.

The CCR personnel have an application to control the status and configuration of each commentary unit: open circuits, routing, processing, gains, monitoring... It can communicate with each individual commentator and monitor or talk to both the program and return circuits of each Commentary Unit. This also includes test tone generators and allows for the recording and play-back of Circuit Identifiers.

The system is organized through the Olympia Planner application, which automatically develops the planning and engineering of the system. This also generates the equipment lists and circuit interconnectivity from a simple definition of requirements.

The system offered a full range of audio signal processing functions as for example compressor / limiter, expander, noise gates, high pass filters or low gain level processors etc. and that can be applied to each audio input of the system without limiting the total number of system processes, i.e. any signal can be processed in the system.

2021 AUDIO OF COMMENTATORS WITH AEQ EQUIPMENT AT THE 2021 WOMEN'S HANDBALL WORLD CUP

THE AEQ ALIO AUDIOCODECS WERE DEPLOYED IN THE VENUES FOR ALL ACCREDITED BROADCASTERS USING EBU N ACIP TECH 3326 STANDARD

The XXV Women's Handball World Championship was held in Spain between December 1st and 19th, 2021 under the organization of the International Handball Federation (IHF) and the Royal Spanish Handball Federation. A total of thirty-two national teams from four different confederations competed for the world title.

To host all the matches, the organizing committee selected four sports pavilions from the Spanish Levante as official venues: Granollers Sports Palace, Pla de l'Arc Sports Center, Ciutat de Castelló Pavilion, and Torrevieja Sports Palace.

AEQ IP audio codecs were deployed in all of them to manage and transmit the audio of all the sports commentators who travelled to the venues to narrate the events for their respective audiences. Most of the units were AEQ ALIO equipment.

AEQ IP audio codecs were deployed in all of them to manage and transmit the audio of all the sports commentators who travelled to the venues to narrate the events for their respective audiences. Most of the units were AEQ ALIO equipment.

AEQ IP audio codecs wFor this type of event, AEQ ALIO has very special features, such as tone control on each channel to adjust the timbre of each commentator's voice, and the dual-channel option to coordinate with a possible operator in the stadium that guarantees the broadcast.

It can be connected to base units from most manufacturers through the SIP communication protocol, in accordance with the EBU standard N ACIP Tech 3326. But if it is connected with an AEQ codec, you can use an exclusive set of tools to help with communication and control of the unit, such as the AEQ CONTROLPHOENIX centralized management software. This control application allows all the equipment on a local network to be discovered in order to control them in a coordinated manner from a PC or group of PCs. Remote equipment can also be controlled via the Internet, thus allowing comprehensive management of the communications network.

2021 AEQ TECHNOLOGY AT THE 2021 CROSSFIT FREAK CHALLENGE IN BARCELONA

THE INTEGRATOR NOU BROADCAST USED INTERCOM AND AEQ COMMENTARY UNITS TO COORDINATE AND STREAM 3 HOURS OF EVENT IN 4 LANGUAGES

The best CrossFit teams faced each other in a closed event on 11 July 2021 from the Razzmatazz hall in Barcelona. After months of waiting because of the Covid19 pandemic, The Freakest Challenge, one of the most spectacular and unique CrossFit events in the world celebrated its 6th final. This competition, organized by Fittest Freakest together with Nike and other partners, was held behind closed doors, but was broadcast live for the first time on the television channels Esport3 and Teledeporte and streamed on the organizer's official website www.fittestfreakest.com.

Although there was no public on the hall, they were able to participate more than ever from home or from the pit lane in games, promos, interviews and more. Online qualifiers were held the previous November. For the first time, the competition had two categories: Official Teams and Adapted Individuals, the last one with two sub-categories, standing and wheelchair. In the grand final, the 8 finalist teams and the 12 individual athletes faced each other in 1x1 elimination rounds and only two teams from each category reached the final duel to take the prize. The final went to

the Catalan team CrossFit 77Feet, who won the title for the fourth time, and the Italian team CrossFit Officine.

Nou Broadcast Service is one of the most active and innovative integrators in the Barcelona area. It develops, among others, HD and UHD capture and presentation systems, audio systems for radio, television and digital sound systems using AoIP Dante, IP transmission systems, 4G, 5G,

Streaming and Satellite, technical advice, consultancy, technical supply management, system design, engineering, planimetry, project coordination and management, installation, commissioning and training.

Nou Broadcast Services was commissioned by the organization to produce and broadcast the event in four languages with exceptional commentators:
-Bruno Ballesté, BarçaTV+ narrator, and crossfiter Albert Naugle for the Spanish channel.
-Official CrossFit Games commentators Tommy Marquez and Sean Woodlan, for the English stream.
-For the live broadcast in Italian, Radio Virgin reporter Giulia Salvi and athlete Roberto Allievi were on hand.
-Miriam Riau and Marc Solá were present for the live performance in Catalan.

AEQ provided the intercom system and commentator positions. A Crossnet matrix routed the audio signals and internal coordination. The stationary workstations were based on TP8116 panels and the mobile workstations on Xplorer.

Eight stationary and 11 mobile stands were set up, as well as four commentator positions, one per language.

Audio from the commentary positions was sent over the Dante IP network to the main production console, a Yamaha QL5.

The stationary TP 8116 stations were installed at the different positions of the production control. The Crossnet matrix and one of the AoIP switches occupied a small space in a rack of equipment next to the camera control.

The Xplorer wireless terminals were used for people on the move during the event: audiovisual producer, mobile cameras and others.

For this purpose, since the Xplorer technology is WiFi, four Cisco access points for WiFi network were installed in the work area in the room, which route the voice over IP between each Xplorer terminal and the VoIP access on the Crossnet 72 matrix. The Ethernet switches had PoE outputs to power the access points.

The Xplorer terminals are charged at charging stations. The battery lasts 20 hours, so there was no need to recharge at the event.

The image was taken using Sony cameras with Canon optics and the lighting was controlled with a grandMA2 console.

For the broadcast in Catalan, the audio commentary was sent to TV3 via an AEQ Phoenix Mobile audiocodec.

2021 TV-START INVESTS IN CROSSNET INTERCOM SOLUTION FOR THEIR NEW OB VAN

ALL THE CONFIGURATION AND SETUP OF THE COMPLETE SYSTEM WAS MANAGED REMOTELY BETWEEN TV-START TECHNICAL TEAM AND AEQ CENTRAL SUPPORT DEPARTMENT

TV START is a television production company with a broad technical base. It offers any service or infrastructure for broadcasting, such as rental of equipment for a complete television production, or live broadcast of any event through a complete and capable human team.

TV-START can offer their services in any region of Russia, Ukraine, other CIS countries or Central and East Europe. In addition, using fly pack equipment, they can produce events on different continents and far away countries.

Mr. Antón Shirokov, TVSTART's COO, has taken a moment in the middle of a production to speak with us. He describes his equipment and activity to us: "We have five OB Van, four of them with satellite connection, with teleport connection, twelve commentator positions, 80 independent lines of communication with the uplink to send the signal to satellite. Apart from event production, we are also dedicated to broadcasting different television channels. Specifically, we provide this service to five TV channels from our own production center. We have known AEQ for a long time, the first equipment we acquired from AEQ was a commentator unit or CU".

TV START observed wide technical advantages in AEQ's intercom systems and the company's management included them in their 2021 technology upgrade plans, in which they built a static studio and a new OB Van.

The flexibility of the TP8000 panels in terms of connectivity - via IP audio, point-to-point digital links, and IP voice with low bit rate, are key features for TV-START. The wide processing capacity of the panels (parametric eq, filters, noise gate, compressor, expander, and limiter) that acoustically adapts them to any user and work style, it is also highly valued by users.

The Intercom solution picked for the studio is based on an AEQ Crossnet 72 intercom matrix, used for the distribution of audio signals. Also, four TP8116 wired user panels in rack format with 16 keys and four pages, for the control gallery and two TP8416 (desktop version), with the same keyboard to program communications, plus an additional telephone type keyboard, for executive management and production office workplaces.

The TV START studio solution also has two BS 3004 user terminals with 4 keys and connectivity exclusively for low bit rate networks. TVSTART is using these panels in remote locations, connected by VoIP.

The second intercom system, placed in the OB Van, includes the same Crossnet 72 intercom matrix used for audio signals distribution between camera operators (using a six-to-one concentrator for analog intercommunication) and seven TP8116 wired rackmounted user panels, for the different directors and technical operators inside the vehicle. The two systems are fully operational to the full satisfaction of users.

On-board system: Left photo, camera operator, video switcher and producer positions. Right photo: Crossnet intercom matrix.

About this system Mr. Shirokov has told us:

The second intercom system is in our last 8 camera OB Van. The requirements were the same: communication with the camera and control operators, communication with the different panels within OBvan itself, and with third-party equipment.

We really like working with AEQ - we like AEQ quality and the relationship with its professionals. The equipment comply with everything that is required. Both technical and commercial feedback are great. We hope to do more projects with AEQ in the future ".

We thank Mr. Shirokov for both his time and his comments. We are also very pleased to work with them.

OLYMPIC GAMES, TOKYO 2020, JAPAN

The 2020 Summer Olympics, also known as Tokyo 2020, was an international multi-sport event held from 23 July to 8 August 2021 in Tokyo, Japan, with some preliminary events that began on 21 July.

The Games were originally scheduled to take place from 24 July to 9 August 2020, but due to the global COVID-19 pandemic, the event was postponed to 2021, the first such instance in the history of the Olympic Games. It was largely held behind closed doors with no public spectators permitted

due to the declaration of a state of emergency in the Greater Tokyo Area in response to the pandemic, the first and so far, only Olympic Games to be held without spectators.

The Games featured 339 events in 33 different sports, encompassing a total of 50 disciplines. Karate, sport climbing, surfing, and skateboarding made their Olympic debut, while baseball and softball also made a one-off return to the Summer Olympics for the first time since 2008. 15 new events within existing sports were also added, including 3×3 basketball, freestyle BMX, and the return of madison cycling, as well as 9 new mixed events in several sports (table tennis, archery, judo, shooting (3), triathlon, 4 × 400 m relay running and 4 × 100 m medley swimming).

The Host Broadcasting Organisation deployed the AEQ Commentary System for the third time at a Summer Game and it consisted in more than 800 AEQ Olympia Commentary Units installed in the 39 Olympic venues. These units were connected to the AEQ BC 2000D router centralizations in the CCR (Commentary Control Room) at each venue.

The CCR personnel have an application to control the status and configuration of each commentary unit: open circuits, routing, processing, gains, monitoring... It can communicate with

each individual commentator and monitor or talk to both the program and return circuits of each Commentary Unit. This also includes test tone generators and allows for the recording and play-back of Circuit Identifiers.

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2021 AEQ OLYMPIA 3 WITH CASABLANCA ONLINE AT MARACANA STADIUM

THE BROADCASTING OF THE MAIN SIGNAL AND COMMENTARY OF THE FLAMENGO-NOVA IGUAÇU MATCH WAS CARRIED OUT BY THE PRODUCTION COMPANY CASABLANCA ONLINE.

Casablanca was commissioned by the organisation to cover the match, which was monetised through the championship's on-demand TV channel and digital TV broadcasting platforms.

The Sao Paulo production company provided several mobile units to the stadium to ensure proper coverage of the match. Casablanca Online is a company of the Casablanca Group that was

founded almost 20 years ago with the purpose of providing live broadcasting services via satellite. The company is considered the largest provider in Brazil with the largest fleet of DSNG units in Latin America and stands out as one of the companies approved by Anatel.

Casablanca Online currently offers complete and integrated solutions for the production, capture, transmission, management and distribution of the highest quality SD, HD and 4K audiovisual content for broadcast and other platforms (satellite, fibre and IP).

For this type of event, they usually use for sound an A&H audio console from television production. The fact that this console has an AoIP connection with Dante protocol, and that Olympia 3 has the same IP protocol compatible with the AES 67 standard, was one of the reasons for its acquisition.


But the decision was also supported by other reasons: The equipment does not require a specific control device, but can be configured and remotely controlled by a simple application. It was also considered the technical support and service in Brazil through the LINE UP Company, and the manufacturer's extensive references through three generations of Commentary Units serving at the Olympics and other major sporting events since 1998.

The football match, which was a high-stakes rivalry in Maracana, took place on Wednesday 3 March 2021 and was won by the home team by 1-0. The only goal of the game came 48 minutes into the second half through Max, with a powerful shot from outside the area, after an assistance from Lázaro, the star of the match.

2021 MOSIR PULAWY PAVILION'S AUDIO-VISUAL SYSTEM UPDATED USING AEQ INTERCOM

THE IP SYSTEM IS BASED ON CROSSNET MATRIX, TP 8000 USER PANELS, XPLORER WIRELESS BELT PACKS AND OLYMPIA 3 COMMENTARY POSITION
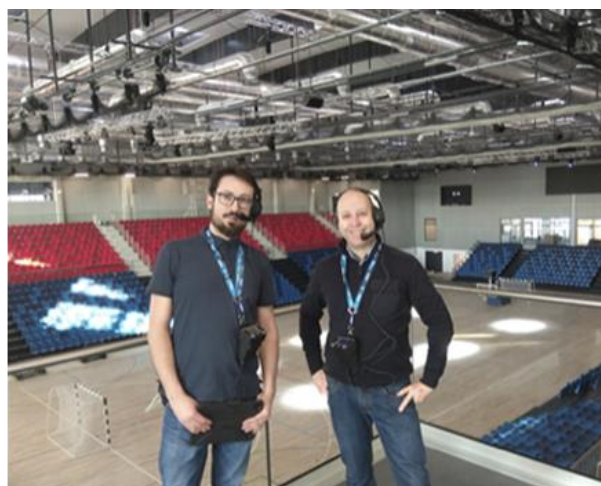
The multi-function Mosir Pulawy pavilion is an important sports arena in the Polish region of Wlostowice, at the country East, and was built in 2020. With a cost above 10 million euro, it offers capacity for more than 4400 spectators.

It is one of the most modern installations of its kind, even at European scale. Apart from holding sports competitions, it will also be used for events and concerts. All the audio-visual systems were installed from scratch as part of the technical equipment implementation, together with a new scenic mechanical system and the stage illumination.

AEQ CROSSNET intercom system was selected among the numerous systems taking part in the audio-visual system of an installation of this level. It was used with TP 8000 user panels, connected via AoIP using AES67-Dante protocol.

In order to ease operators' tasks (who, due to their jobs, need to move freely around the building while remaining properly communicated), the provided AEQ CROSSNET system counts with XPLORER wireless belt packs.

In order to finish AEQ technology deployment in the Mosir Pulawy pavilion, the new AEQ OLYMPIA3 was integrated as part of its operating platform. It can be used as an isolated workplace for the journalists who are following the events held in this venue, or integrated with CROSSNET as one more intercom panel. In both cases, the audio produced has the highest quality, thanks to the AES67 / Dante IP connectivity included in the unit.
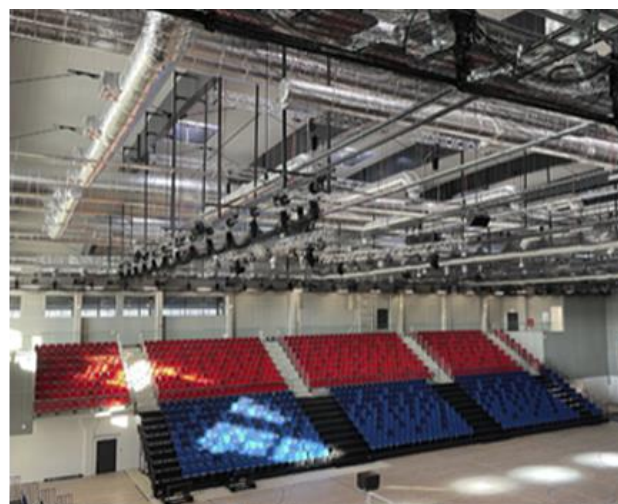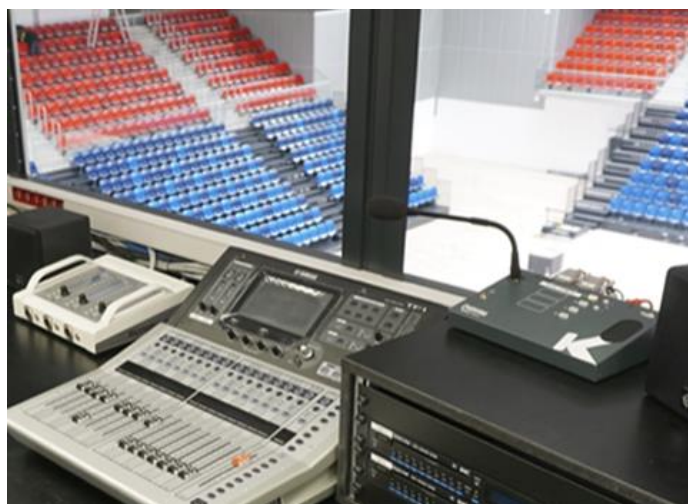
The complete project, including its installation, configuration, start-up and training has been leaded by the technical staff of AEQ local distributor Tommex, in tight collaboration with AEQ central technical services in Madrid, who remotely collaborated in order to complete the project's execution during the pandemics.

2021 PRODUCTION COMPANY LOGOS TV UPGRADES ITS OB VAN WITH AEQ INTERCOM SYSTEM

CROSSNET MATRIX AND TP8000 USER PANELS FACILITATE INTERCOMMUNICATION IN THE BROADCASTER'S MOBILE STUDIOS

The production company of Logos TV, with its headquarters in Moscow, has as its main line of business, the leasing of equipment for recording television programs, sports competitions, concerts and events, etc. It also provides technical staff for all types of media productions.

To serve the entire Russian territory, Logos TV has OB Vans deployed throughout the country. Actually this production company already had a KROMA intercom system, composed by the TB3020 matrix, with analogue and digital ports integrated into these units. After checking its operation for years, the Russian broadcaster now has decided to update its intercommunications with AEQ, this time acquiring the CROSSNET matrix and the TP8000 user panels.

Vidau is AEQ dealer in the area and responsible for the installation, recommended to Logos TV the incorporation of the compact CROSSNET matrix, in its 72-port version, but easily expandable in the future to 168. Unlike the TB3020 matrix, this matrix already has analogue, digital and multi-channel IP audio interconnection functions over Dante-AES67 proto.

The TP8000 user panels installed are both in rackable format, model TP8116 and desktop model TP8416. Both models have 16 programmable keys on 4 different pages. It has individual volume control for each communication point and ECO canceller. It has a double AoIP Dante™ port, a VoIP port, a Digital port and an analogue port. Thanks to the implementation of an internal DSP with great processing power, the user can carry out advanced configurations for each panel. (Click here to know more)

The combination of the CROSSNET matrix and the TP 8000 user panels via digital links creates an ideal system for portable installations as well as for small and medium sized installations. In this particular case, Logos TV carries out its productions in complete safety with all the equipment installed in flycases, which are easy to transport and change according to the needs of the technical deployment.

This is why the CROSSNET solution turned out to be the most comfortable for them due to its flexibility, easy handling and that it fits perfectly into the operation of a portable studio.

Logos TV regularly rents out this portable studio to several of its clients. This means that the configuration software has to be very easy to use and intuitive. Crossmapper meets these requirements perfectly and also fulfils the function of monitoring and control. As the Logos TV managers commented, "The Crossmapper SW has a very user-friendly interface and it is very easy for our customers to learn how to work with it."

2020 YAMAL-REGION TV BROADCASTS MEN'S VOLLEYBALL CHAMPIONSHIP WITH AEQ INTERCOM SYSTEM

ALL COMMUNICATIONS ARE CENTRALIZED IN A AEQ CROSSNET MATRIX

Yamal-Region is a TV company founded at the end of the last century which has developed significantly to become the first TV channel in Russia Artic.

They are located in the city of Salekhard, in the region of Siberia, where the nomadic Nenets tribes live. It has already become one of the largest media. Its programming is mainly broadcasted in Russian but they also include languages of the indigenous tribes of the North such as: Khanty, Nenets, Komi and Selkup.

The TV station mostly broadcasts football matches and other sports competitions from the "Zvezdiy" Sports Palace (meaning "of the stars") for production companies such as Match-TV, Start-TV, and other local cable TV facilities. In addition, they film and broadcast all matches of the Fakel volleyball club as well as the Russian Volleyball Championship that is usually celebrated in October.

The technical implementation of Yamal-Region TV mobile unit had to be done as soon as possible to cover the Russian Volleyball Championship. The installation was designed and put into operation in less than two months, which is an achievement in this kind of projects in the region.

Yamal-Region TV assigned the project to the Russian integrator DNK Corporation, which is responsible for supplying technical equipment to television and film studios, OB Vans, satellite stations, special lighting systems and automation systems for radio and television applications.

One of the essential parts of the installation has been the implementation of the Intercom system, which incorporates a compact matrix with IP connectivity, AEQ CROSSNET model, and audio features compatible with television or radio transmission (broadcast quality). The matrix incorporates 8 KROMA legacy digital intercom ports, 12 analogue ports with balanced audio at broadcast quality and 20 IP ports with compressed audio.

Two user panels in TP8116 rack mounted format, featuring 16 programmable keys and up to 4 pages (up to 64 destinations) have been delivered together with the Crossnet matrix. Each panel has an individual volume control for each communication point, which, on the other hand, has an integrated ECO and DSP canceller. Finally, all the user panels have redundant AoIP ports for Dante™, a VoIP port, a Digital port and even an analogue port.

2020 AEQ PROVIDED THE INTERCOM SYSTEM FOR THE LEAGUE OF LEGENDS HELD AT E-SPORTS ARENA IN CIUDAD DE MEXICO

RIOT GAMES COMMISSIONED THE TECHNICAL PROJECT TO THE MEXICAN SUBSIDIARY OF THE SECUOYA GROUP

Riot Games is an online game developer company that also organizes eSports events worldwide. In particular, they have developed a game platform named League of Legends (one of the most famous online games in the world) that has achieved a great success across Latin America.

League of Legends was born in 2013 and has been able to consolidate as one of the most important eSports tournaments. The so-called electronic sports are growing exponentially: as an example, the finale of League of Legends that took place two years ago was seen by more than 99 million people worldwide.

All the production and League of Legends (LoL) tournaments in Latin America took place in Santiago de Chile city, and were broadcasted via streaming to the rest of the world.

Facing the attained success and with the aim to cover a larger markets, the decision to move all the production and games themselves to Mexico City was made. Due to this strategic movement, the first eSports arena in the world was built in Latin America, in order to be able to

offer competitions to public in general, and send the signal to a local TV station (TV Azteca) and via streaming.

The Arena eSports Stadium has been equipped thanks to an agreement between ARENA, Riot Games and TV Azteca. It is located in the Mexican Capital, in one of the Cinemex Cinema Complex, inside the Artz de Pedregal Shopping Mall.

This area uses cutting-edge technical means. 140 square meters of LED screens have been installed, with 16 cameras, robotic illumination and all the technical developments to provide the attendants to the tournaments a truly immersive experience.

As part of a contract with Riot Games, the recently founded subsidiary of Secuoya in Mexico became in charge of the design and equipment, production and broadcasting service of the Continental League of Legends.

Sequoya is a leading group in audiovisual creation, production and distribution. They are specialized (among other fields) in the externalization of operative TV areas and other audiovisual contents, providing trained personnel for operation and engineering, as well as the required technical equipment. Its operational area covers the whole Latin America, USA and Spain.

In parallel, counting with a staff of 40 people (Secuoya Mexico workers) as technical personnel, the company has installed all the required production equipment in the room and provides the audiovisual broadcasting service. In order to coordinate this large human team, a powerful, state-of-the-art Intercom system is required. Sequoya has provided and started it up by contracting AEQ-Kroma Mexico.

Once the needs were evaluated together, the following equipment was implemented:

- Crossnet 72 compact Intercom Matrix with IP connectivity and audio characteristics which are compatible with radio or TV production (broadcast quality).
- 16 TP 8116 IP-connected Intercom User Panels in rack format, for the stable workplaces in Lighting Control, Shading, VTR / Switcher, Producer, CEO and Observers, among other technical and operating staff.
- 2 x 6 to 1 concentrators for 8 stage cameras for cameramen usage.
- 9 Xplorer Wireless beltpacks to be used by cameramen, coordinators and attendants.

Here are some important highlights about this project:

- IP Intercom Panel using Dante Protocol. In the same way, an Allen&Heat audio console has been installed, to be able to share intercom audio and cabin sound, so more AoIP audio sources can be integrated in the future.
- Wireless Beltpack integration through 5G Wireless general-purpose network installed in the room. The service coverage includes the operation areas, theater, backstage, main stage and reception lobby.
- The integration of Intercom licenses in Smartphone mobile devices, tablets or similar is planned, in order to access the Intercom system from any geographical area, as simple additional panels.
- The integration was performed using Sequoya staff. The engineering heads were Walter Gómez and Rodrigo Cotiart, supported by AEQ-KROMA Mexico Manager Engineer Cesar Reyna, and, from Madrid headquarters, by Roberto Tejero, product Manager and the rest of Customer Service staff.

2020 ANTENNA HUNGÁRIA RELIES ON IP AUDIOCODECS PHOENIX ALIO FOR ITS SPORTS EVENTS BROADCASTING

THE BROADCASTER ANTENNA HUNGÁRIA USES AEQ'S PHOENIX ALIO IP AUDIOCODECS TO SUCCESFULLY BROADCAST THE EUROPEAN WATERPOLO CHAMPIONSHIPS 2020 IN BUDAPEST.

Budapest is a European city very involved in the celebration of continental sports events. Antenna Hungária, is today the largest audiovisual services company in Hungary. It has the most extensive facilities and the most qualified personnel to provide radio, television and telecommunications services in Hungary. Antenna Hungária has the largest fleet of OB vans units in the country, and during these days it was in charge of the European Men's and Women's Waterpolo Championships broadcasting. This competition was being held in Budapest's Duna Arena in 2020 with the participation of 16 countries, to be precise: Germany, Croatia, Slovenia, Spain, France, Georgia, Greece, Hungary, Italy, Malta, Montenegro, Netherlands, Romania, Russia, Serbia and Turkey.

To broadcast the audio of the event with the highest quality, the member of EBU (European Broadcast Union) host broadcaster Antenna Hungária, has relied on AEQ's PHOENIX ALIO portable IP audiocodecs.
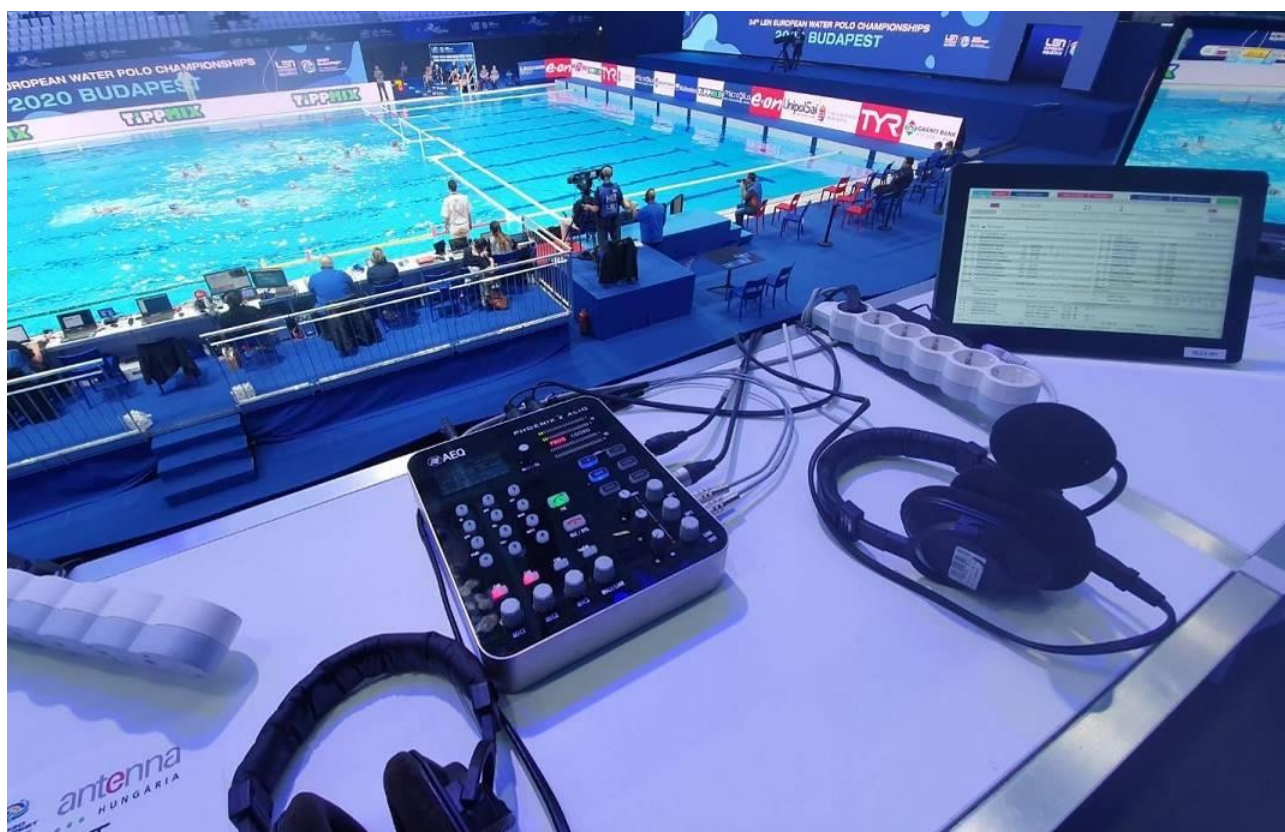

Five units give service to the broadcaster to cover this edition of the championship in different languages for the different stations that have requested the "Fully Equipped Commentary Position" service. This service gave a technical support to the broadcaster who was supported by Antenna Hungária in their communication issues, with the support of AEQ if necessary.

Several top-level broadcasters from Serbia, Croatia, Malta and Greece have taken up this modality. The links were mostly done by RTP protocol, and some broadcasters registered the codecs on their own SIP server as an additional means of ensuring the link.

Antenna Hungária pointed out that AEQ Phoenix ALIO, has been optimized for a simple and flexible use and operation, being able to cover even other types of events such as concerts due to its feature to retransmit stereo signals. They also use it to broadcast political and social events.

ALIO can be controlled remotely from an application, which allows it to be handled by inexperienced hands. It is sometimes given to journalists to make the interventions in the programs from their home via their home Internet connection. They are controlled from the station, and have a curious button called "HELP" to ask for remote technical support.But ALIO is ideal for this type of sports broadcasting: On the one hand because it can work with two independent bidirectional circuits, one for program and one for coordination. Also because it has equalization of the microphones, you can mix the international stereo sound with the microphones, and its design, compact optimized for use outdoors with users outside the owner of the equipment, where the treatment can not always be careful enough.

For this type of transmissions with customers in various countries, it can connect to other codecs from most manufacturers thanks to the SIP communications protocol, according to N/ACIP Tech 3326 EBU standard. This avoids having to send stationary equipment to all the broadcasters of the event. But when connecting ALIO to another AEQ codec, users can take advantage of an exclusive set of tools that makes the establishment of communication and the control of the unit a simple task, including SIP and IP (RTP) connectivity, with a simplified connection tool called SMART RTP.
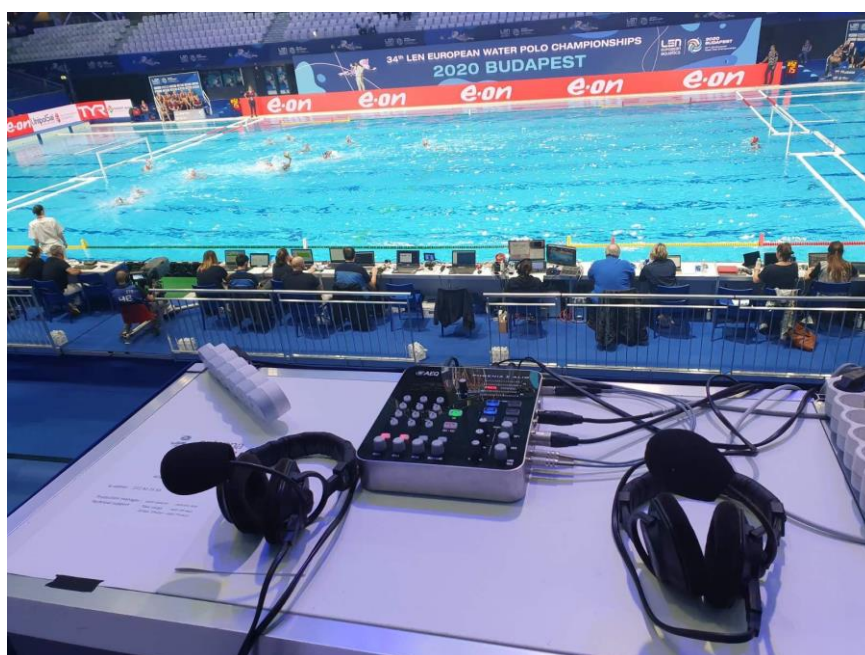
AEQ TECHNOLOGY IN THE EUROPE VS USA ATHLETICS MATCH AT MINSK 2019

MINSK SPORTS ARENA COUNTS WITH A LARGE AEQ BC2000D DIGITAL AUDIO MATRIX AND UP TO 160 AEQ STRATOS STATIONARY AUDIOCODECS.

The EUROPE vs USA MATCH was held in the Dinamo Stadium at Minsk, Belarus, between 9th and 11th September. This is an international outdoors athletics competition confronting the United States and Europe.

The event was scheduled to take place three weeks before the 2019 Athletics World Championship in Doha, and only a few days after the ending of the Diamond League 2019. This MATCH represents the first international competition between the European and American blocks since the sixties.

The MATCH gathered 300 world-class athletes who competed in 37 different events including races, hammer and javelin-throwing or jumping. It has also been the first opportunity to watch the new 4x400m mixed relay races in a high-level sports event before its inclusion in Tokyo 2020 Olympics.

Minsk stadium has a permanent set of 150 AEQ Olympia commentary units, the kind of equipment commonly used in commentary positions since Vancouver 2008 Winter Olympics.

On the other hand, the whole Dinamo stadium at Minsk counts with Dante-AES67 AoIP Multichannel technology provided by AEQ. Besides, a powerful AEQ BC2000D audio matrix is installed, -which is able to centralize and distribute all the audio signals produced in the building.

Besides, 160 Phoenix Stratos Audiocodecs are installed to be able to send commentators' voices towards the different radio and TV stations that have purchased the rights, either using synchronous ISDN links or IP connections.

BROADCASTING

EUROVISION SPORT was this event's broadcasting partner. The equipment installed in this stadium significantly exceeds the requirements for an event of this size. Eurovision only used the PHOENIX STRATOS audiocodecs in order to send the audio from commentators speaking different languages to all the stations which broadcasted the event through the permanent infrastructure.

SCORING

Each team was allowed to use 4 athletes in each individual competition and two teams with four athletes in each relay. The winner of each individual and relay competition was awarded 9 points, the second one 7 points, the third one, 6 points, and so on. The highest score achievable by each team in a single competition was then 27 points, while the lowest score was 10 points, or 16 and 11 points, respectively, in relay competitions.

The maximum theoretical score was 966 points, while the minimum one was 373. The final result was 724 ½ for Europe versus 601 ½ for USA.

2019 AEQ PHOENIX PORTABLE AUDIOCODECS AT THE BASKETBALL WORLD CHAMPIONSHIP

THE NANJING AND DONGGUAN VENUES OFFERS ALL COMMENTATORS THE AEQ PHOENIX MOBILE AS THE IP COMMENTATOR UNIT FOR THEIR UNILATERAL COVERAGE

The 2019

Basketball World Cup was the 18th edition of the international tournament that until 2010 was known as the Basketball World Championship. This was the first edition in history to be played with 32 teams and in addition, the first to be played following new fixtures and taking this tournament out of the years where other major events are held such as the FIFA World Cup or the Olympic Winter Games.

The AEQ Phoenix Mobile unit supports up to 4 simultaneous commentators and their individual headset combinations, provides dual, full-duplex Stereo Communication for Program and Coordination and advanced user interface through a 3.5 "TFT colour screen.

The device has a fully configurable digital mixer (cross-points and sum buses) as well as analogue microphone and line input with their corresponding selectable Phantom power. The unit also provides dynamic input processing (DLP).

MediaPro was the designated service provider for the host broadcasting services at the Nanjing and Dongguan Competition Venues. Mediapro selected the AEQ PHOENIX MOBILE IP Codec and Commentary Unit to equip all the fully equipped commentator positions at these Venues. AEQ technology offers the highest guarantees of quality and operation at major sporting events worldwide and in this line the Phoenix Mobile units selected provides great flexibility.

The AEQ Phoenix Mobile Commentary Units are fully adapted to the demands of outside broadcasting. It can be operated in a shoulder strap or on desktop thanks to its powerful optional Li-Ion battery. Its design is packed in a hard ABS cover and has a protective lid to avoid unwanted or accidental operation of its switches and encoders.

The equipment is delivered with a practical carrying bag to hold the equipment itself and the minimum necessary accessories. This Codec is part of the AEQ Phoenix Family of Codecs and is compatible with most third-party equipment using IP and ISDN/ISDN interfaces: It supports SIP and the most widespread encoding algorithms and is fully compatible with the N/ACIP EBU Tech3326 recommendation.

It also have optional communication modules for standard telephone lines and ISDN links.
AEQ provided Phoenix portable units and also the SIP server service for all the broadcasters in order to help in the remote communications problems where a complex 4G network like China Telecom ones has with lot of firewalls.

AEQ TECHNOLOGY AT THE 2019 PANAMERICAN GAMES

THE HOST BROADCASTER – MEDIAPRO - SELECTS AEQ OLYMPIA3 COMMENTARY UNITS FOR THE EVENT.

The system as of whole was operating with Multi-channel AoIP Network in Dante-AES67 format and the Olympia 3 natively adopts this format and technology. This greatly simplifies the technical installations and renders the system with great dynamism that is required to adopt to rights-holding broadcasters (RHB's) interests for unilateral coverage and following the results of the competition.

The 2019 Pan American Games, officially the XVIII Pan American Games, are an international multi-sport event that took place between July 26 and August 11, 2019 in Lima (Peru). More than 6500 athletes from the 41 countries of America participated in 39 sports. Immediately after these games were held, the Para Pan American Games are held. Both events serve as a classification for the Olympic Games and the 2020 Paralympic Games.

AEQ supplied the designated Host Broadcaster – Mediapro, with 35 units of the OLYMPIA3 commentary units that were installed on the fully equipped commentary positions at all competition venues.

Also, the mixed Zones, Press Centres and the IBC were equipped with AEQ NETBOX Audio Interfaces. These units are ideal to convert Analogue and Digital Audio sources into AoIP Multi-channel flows and vice versa. This allowed connecting areas where the Audio sources and the return signals were Analogue or Digital to enjoy the same benefits as the rest with a minimum adaptation effort.

Finally, to send all the commentator audio signals from Lima to the RHB´s home countries and to provide an audio return circuit, AEQ VENUS 3 Dual Channel Audiocodecs were installed. These Codecs were connected via the Public Internet or dedicated IP Networks, depending on the infrastructure deployed for each Rights-holding Broadcaster.

Logically, not only the audio equipment for this important event has been supplied by AEQ. All the necessary remote control software to centralize the system control and technical support as much as possible was also deployed by AEQ. Further, the essential spares for and event of this magnitude, including the necessary support personnel and the operational training for new operators helping to make the most of the deployed equipment, was also part of the supply by AEQ. Head of AEQ's technical operations in Perú was Mr. Luis Hernandez whom was working in close collaboration with the local Mediapro Team.

AEQ INTERCOM AND COMMENTARY AUDIO SYSTEMS AT THE 2ND EUROPEAN GAMES IN MINSK WITH HOST BROADCASTER ISB

ISB REPEATS AS HOST BROADCASTER FOR THE 2ND EUROPEAN GAMES IN MINSK 2019 FROM 21 JUNE TO 30 JUNE **2019**

The Host Broadcaster for the Minsk 2019 2nd European Games. The European Games sees 4000 athletes from 50 European Countries competing in 15 different Sports and 23 disciplines. 11 venues, some with multiple FOP, plus an IBC is part of the Host Broadcast coverage that ISB is undertaking during these Games.

"In particular, and concerning everything related to communications, we have traditionally been relying on a lot of AEQ and Kroma by AEQ products, and for this occasion we are not making any exception. We feel really comfortable working with AEQ's equipment and their technical support." said Mr. Galán, during the event.

The real-time broadcast production of the multilateral signals was developed with a total of 12 OB Van and more than 200 cameras, including specialized cameras, 8 ENG systems and a series of flight cases for locations with multiple FOPs. 4 MDS channels were produced + one unilateral channel reserved for when needed, was also part of the deployed resources.

700 broadcasting professionals ensured that the signals were produced and reached the world's 190 right holders at IBC and their home countries. In total, there were over 600 hours of live coverage and close to a total of 800 hours of broadcast production.
Esteban Galán, ISB Technical Operations Chief explained that the deployment of technicians resources for broadcasting involved, AoIP network interfaces, Intercom systems, AudioCodecs and Commentary as well as video monitors for the production of the event.

The Venus 3 being capable of connecting locally to AoIP multi-channel networks became an ideal solution for the International Contributions of Commentary Program and return Audio. Also, the VENUS 3 was used to interconnect some Venues with the Commentary Unit AEQ Phoenix ALIO.

The ALIO is in reality a portable AudioCodec with mixer functions and that allows for either local or remote control. This comes really handy when the Talents at the Commentary position are non-technical and need assistance.

Other Venues, such as the Main Stadium counted on the Olympia 3 AoIP Multi-channel Commentary Unit. Olympia 3 is in essence a sound mixer and it can operate as an independent or standalone Commentary Unit or linked to a small, medium or large Commentary System.

Connected to a Dante™ based audio IP routing system, receiving and sending audio from/to any device, that can be anything such as a mixing console or NetBox audio interface, a third-party console installed in a mobile unit, or any other type of device manufactured by any of the many manufacturers that are incorporating Audinate's Dante™ technology or even using AES67 protocol.

The intercom system deployed by ISB was an AEQ Crossnet based system with Multi-channel AoIP with broadcast quality audio for the communication channels. A total of around 45 User panels were installed, most of them in the IBC and a few at the most important competition venues.

The Dante Network allows for the Crossnet to carry IFB's originating from basically any point in the network and can be anything from International Sound to Mixed zone feeds or Commentary Guides for the Off Tubes.

Signals can be accessed through the NetBox 32 and 8 AD units and also the Netbox 4 MH's that were deployed to be able to contribute with signals at Mic. level to the AoIP network for, for example, the Off-Tubes.

Signalling in these was integrated using the Studioboxes allowing for remote control via Classical and also Virtual GPIO's.

The Kroma by AEQ Broadcast Monitors Series 7000 in 18" and 24" for production quality control have, all were integrated in the ISB Flight-Cases and in the Central Control in the IBC.

All in all, ISB used quite a wide range of different products from AEQ and that are integrated for the Commentary Audio, Production Intercom and Quality Control Systems.

2018-2019 STREAM TEAM IS RUNNING REMOTE PRODUCTION OF FINLAND'S ICE-HOCKEY LEAGUE WITH OLYMPIA 3 CU

STREAMTEAM IS RUNNING ITS SECOND SEASON OF REMOTE PRODUCTION OF FINLAND'S ELITE ICE-HOCKEY WITH AEQ'S OLYMPIA 3 COMMENTARY UNITS.

In December 2017 Streamteam Nordic Oy was commissioned to produce match coverage for the Finnish Ice Hockey Elite League, SM-liiga, for the telecommunications service provider Telia. Telia is the rights holder for SM-liiga in Finland for six consecutive years, starting from the 2018-2019 season.

Streamteam selected Broadcast Solutions to provide the necessary infrastructure and the solution was taken into operation in the middle of September 2018 and in time for the start of the 2018-2019 hockey season. The system is based on IP and real-time Audio and Video signals are channelled to and from ice-hockey stadiums around the country and the central production facilities in Helsinki.

The remote production is a quite complex operation and involves Workflow integration for equipment from a myriad of different manufacturers.

The Studios in Helsinki have eight transmission galleries, a virtual studio, and a 5.1 surround-capable audio control room equipped with a 42-fader Studer Vista V with a combination of analogue, digital and Dante AoIP cards, and Genelec monitoring. The eight galleries and a separate mixing room for the virtual studio are equipped with Soundcraft Si Performer consoles to mix talent with premixes provided from the Studer Vista V.

AEQ supplied a total of 15 Olympia 3 Commentary Units that are servicing the commentary production of the matches. The Dante enabled AEQ commentary units are deployed with the Mobile Units at each arena on match day. The original plan also involved 6 Off-tube commentary booths, but talent and guests are more in favour of the local action, so for the time being, all the Olympia 3 Commentary Units are part of the local Ice-hockey stadium set-up on every match-day.

As already mentioned, Streamteam use Audinate Dante AoIP technology, including Dante Domain Manager, to interconnect all the audio equipment as well as provide the long distance audio tie lines for the remote sites through 1GB Ethernet WAN connections provided by Telia.

These tie lines are the audio streams corresponding to each commentator/guest microphone, and in the other direction, the return feeds such as IS, orders, technical feedback and guides. Dante tie lines also carry the ambience microphones and all other audio sources that are part of the 5.1 audio productions for the matches

Technical commentary control and support, including technical intercom, is handled directly from Streamteam´s Helsinki HQ through the AEQ Commentary Control Unit
Software - Olympia Virtual CCU.

Telia will be covering 450 ice hockey games every season, with the Helsinki production facility serving as a hub that's linked to 14 venues across the country.

At any given time, the production hub can broadcast from seven locations across the country simultaneously.

Telia broadcast all matches in Telia TV, IPTV and media box, cable television, and mobile, tablet and PC.

This ongoing project was lead by Broadcast Solutions of Finland, with Toni Partti as the main Liaison. Toni Partti has nearly 25 years of experience in audio for film and broadcast.

2018 EUROPEAN CHAMPIONSHIPS, GLASGOW AND BERLIN, EUROPE.

The EUROPEAN CHAMPIONSHIPS 2018 took place during the first 10 days of August 2018. It is the first issue of these championships. Around 4500 athletes from 52 different countries have participated and competed for one of the 187 gold medals at stake.

This first edition of the European Championships was co-hosted between Glasgow and Berlin, with another two venues at other locations: Edinburgh for open water swimming competitions and Gleneagles for golf competitions.

AEQ has provided nearly 80 OLYMPIA3 commentary positions, to be installed at the 16 different venues, including Berlin Olympic Stadium as the headquarters of the athletics competitions.

The entire AEQ OLYMPIA 3 system works over IP networks using DANTE – AES 67 protocol for the transmission of multichannel audio, what makes dynamic signal routing much easier. The system was supported totally by remote control from one or several distributed PCs.

The OLYMPIA 3 is the latest standalone Commentary Unit (CU) released by AEQ. The CU offers connectivity by AoIP with 8 channels via Dante™ protocol a scalable architecture: simple routing to Dante™ IP devices; integrated in IP intercom system, or connected to IP Commentary System Matrix.

In addition, AEQ also supplied 14 units of the AEQ NETBOX 4. These interfaces have been used in locations and workplaces as a substitute of the OLYMPIA 3. In these positions it was not required the entire functionality of the CU, but there was a need to insert and extract audio to/from the main DANTE – AES67 IP network.

NETBOX 4 is an IP audio interface which provides high quality microphone inputs and headphone outputs. As an IP device, it may be placed anywhere across the Dante protocol based IP network. The NETBOX 4 range also provides the same inputs and outputs in balanced analog line format, as well as 4 general-purpose inputs and outputs (GPIO) which can be used as signaling interfaces to be transported between different devices in the IP network.

30 VENUS 3 audiocodecs have also been provided for external communications, allowing for the connection of the audio produced in the OLYMPIA 3 Cus, with the remote destinations at the home countries of each radio & TV producer's participating in the event. AEQ VENUS 3 offers a great advantage, as it features integrated Dante connectivity, so in most cases the audio signal path can be 100% IP-based from the place it is generated to the destination it is distributed to, without any intermediate conversions.

VENUS 3 is a dual, full-duplex stereo IP audiocodec with local analog, digital and AoIP Dante ᵀᴹ connectivity. It is remotely controlled by means of a multi-user and multi-device software application. It provides "carrier-grade" features such as redundant power supplies - optionally accepting 48V DC-, dual LAN port and dual RS232 auxiliary data link. It also offers OPUS coding algorithms, GPIO and complies with the EBU N/ACIP standard.
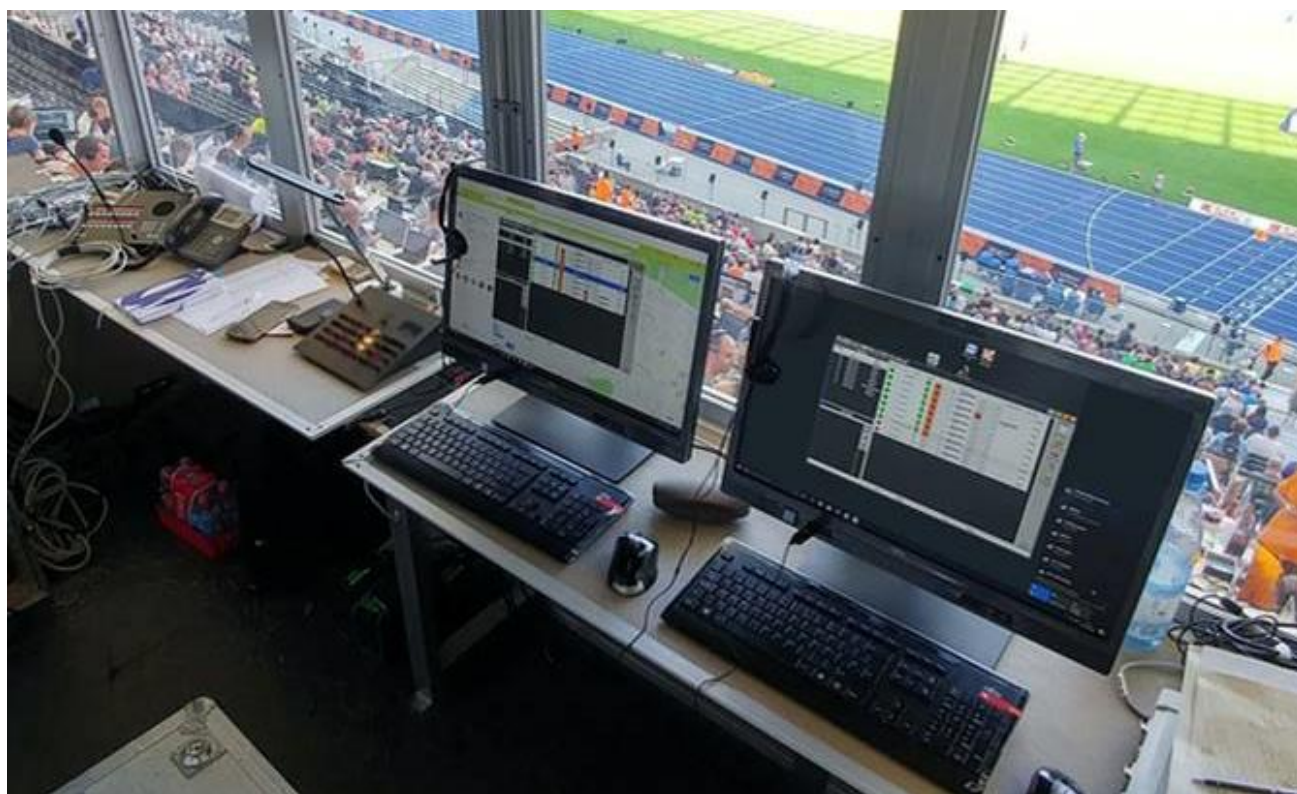
For internal communications, AEQ has provided the event's Host Broadcaster with a complete CROSSNET intercom system for internal coordination. Of course, just like the commentary units, the NETBOX 4 interfaces and the audiocodecs, this CROSSNET intercom system is IP native and operates with high-quality multichannel audio in DANTE - AES67 format.

CrossNET is a high-performance intercom matrix with IP connectivity, transporting broadcast quality audio. It also features high quality, balanced analog inputs and outputs able to transmit compressed, telephonic bandwidth audio. It can be scaled from 40 to 168 ports.

Being a world-class sports event, the largest broadcasters in the world have been present there
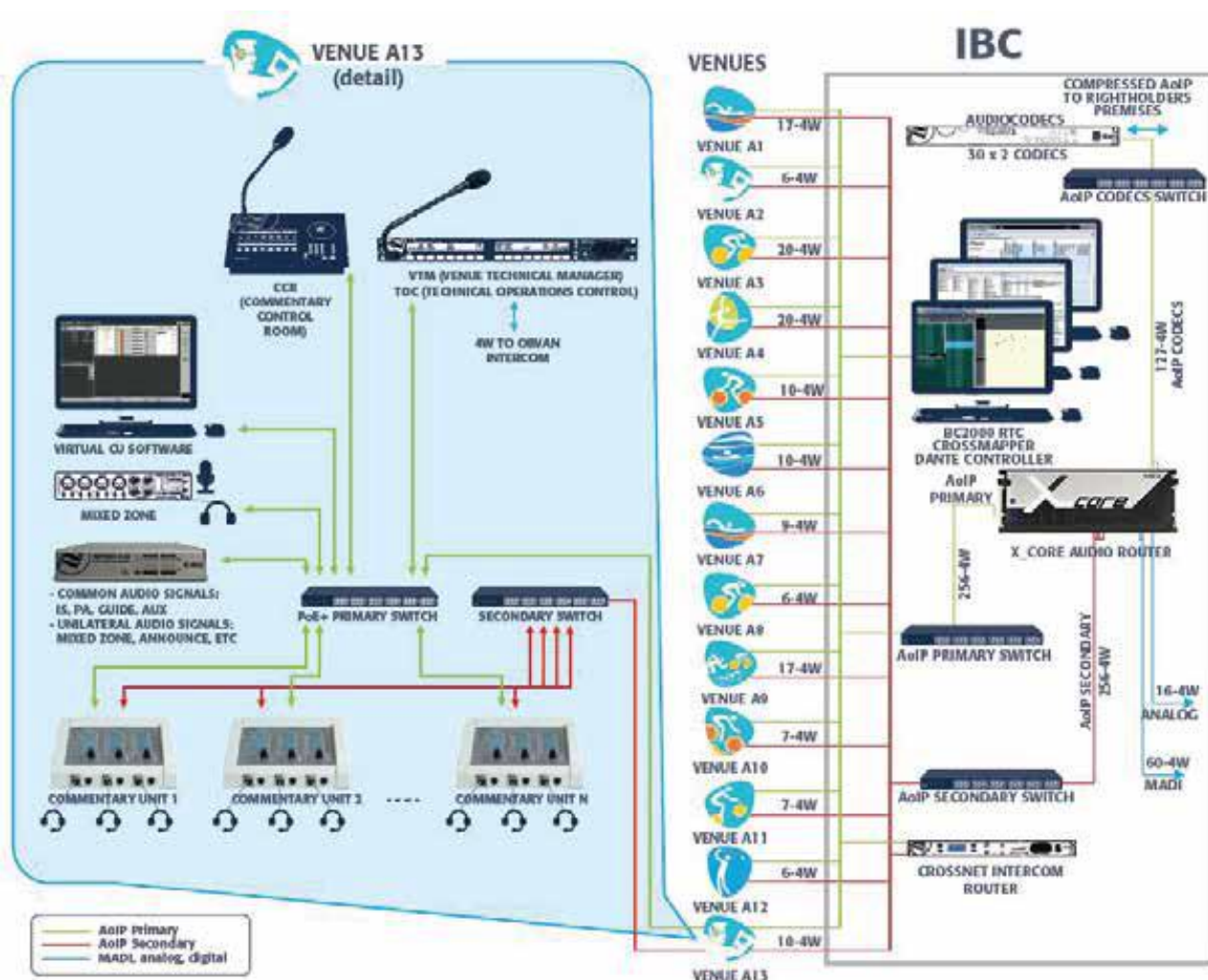
2018 AEQ PHOENIX AUDIOCODECS AT RUSSIA WORLD 2018

MANY RADIO AND TV STATIONS AROUND THE WORLD ARE USING AEQ TECHNOLOGY TO ESTABLISH THEIR CONNECTIONS.

Since the last June 14th we can enjoy already of Russia FIFA World Cup, and as every four years it is the highest-impact sports event during the summer.

This is the first World Cup held in Eastern Europe and, for the very first time, the tournament takes place in two different continents: Europe and Asia. This supposes a great technical deployment for many broadcasters around the globe that travel to Russia to provide tight tracking of the evolution of all teams in the competition.

Apart from the many followers who have gone to the country to watch the live matches, a planetary audience will be supporting their teams' colors from home, thanks to the signals produced by the radio and TV broadcasters present there.

From the Russian National Radio VGTRK, counting with a large pool of AEQ PHOENIX stationary audiocodecs as well as several production studios based on AEQ BC2000D digital technology, to large communication media such as Mexican TELEVISA or AZTECA Televisions, Spanish COPE and ONDA CERO radios, Brazilian GLOBO and RADIO JORNAL, or Indonesian REPUBLICA Radio... all of them are using AEQ audiocodecs for their transmissions over IP and even ISDN lines, using PHOENIX family audiocodecs: STRATOS, MERCURY, VENUS, MOBILE and ALIO.

2018 AEQ CADENA COPE BROADCASTS THE 2018 WORLD CUP IN RUSSIA WITH AUDIOCODECS PHOENIX STRATOS

AN EXTENSIVE AUDIOCODEC SYSTEM GUARANTEED REDUNDANCY USING IP AND ISDN LINKS SIMULTANEOUSLY

The 2018 FIFA World Cup Russia took place from 14 June to 15 July, and as every four years it was the most important media event of the summer.

This was the first World Cup to be held in Eastern Europe, and for the first time, the Championship took place on two different continents: Europe and Asia, which was a huge technical deployment for most of broadcasters around the world...

As well as the fans displaced to the country to watch the different matches, a global audience was following their football teams, thanks to the signals produced by these radios and televisions present in Russia.

COPE, is one of the biggest radio stations in Spain. Its involvement with sport and especially with football made it develop a wide deployment for the World Cup. A base of operations or "IBC" was set up in Moscow with a OB van, a main communications rack and a secondary or reserve one.

In the main rack, 8 dual AEQ STRATOS audiocoders were installed, each capable of establishing two bidirectional stereo circuits that can be configured for IP or ISDN network links.
From these audiocodecs, circuits were established with all the stadiums and with the central studios in Madrid. The system, being composed of 8 dual stereo audiocoders, had the capacity to develop 16 simultaneous bidirectional links to be configured according to the needs of each moment, although for a efficient communication, fixed assignments were made.

The first 5 audiocodecs were the most flexible to use, to establish 10 different links, almost always by IP, with several stadiums at the same time. The codec number 6 established a double link with Madrid by ISDN.

The codec 7 was configured to establish a double link with the stadiums of two different Russian cities by ISDN, at the same time that its codec number 2 allowed to establish a reservation with Madrid by ISDN.

The codec 8 established a double link by IP with Madrid: one codec transported the program and its return; the other established a bidirectional coordination circuit. The main conclusion of the deployment is that in important events like this one, the conviction that IP networks will provide an excellent service, does not avoid the convenience of paying two national and two international ISDN links to ensure connectivity over the switched telephone network in the event of a communications failure.

Another important operative detail is that COPE does not use the menus of the STRATOS front screen. It is much more convenient to control the equipment (both local and remote in each stadium) from the Phoenix Control application.

They can control the app either from a PC at the IBC in Moscow, or from the permanent control PC of the codec network at the Central Control in Madrid, and even from both locations at the same time, with the appropriate coordination that avoids giving contradictory orders from each Phoenix Control.

In addition to being able to operate with all the codecs in sight, VUmeters can also be deployed to indicate the audio transport activity of each input or output channel of each codec.

In the stadiums, were also used Phoenix ALIO portable codecs for IP links and SWING and TLE 02 audicodecs for ISDN links.

## 2018 OLYMPICS WINTER GAMES, PYEONGCHANG, SOUTH KOREA.

PyeongChang 2018, was an international winter multi-sport event that was held between 9 and 25 February 2018. The Games featured 102 events over fifteen disciplines in seven sports and with 2,914 athletes from 92 countries, including the debuts of Ecuador, Eritrea, Kosovo, Malaysia, Nigeria and Singapore.

15 sport disciplines took place in a total of 13 event venues, which were divided into two clusters: PyeongChang Alpensia Cluster and Gangneung Coastal Cluster.

The Host Broadcasting Organisation deployed the AEQ Commentary System for the third time at a Winter Game and it consisted in 502 Commentary Positions and a large number of BC 2000D Frames for the Commentary Switching Centre at the IBC and the different Venues. The Links that were set up to connect the Venues and the IBC were long distance MADI links over dark fiber. The system is a very complex routing, transport, distribution and control system for the audio signals between the competition venues and the International Broadcasting Center (IBC) in the Alpensia Cluster.

Of the more than 105 international broadcasters transmitted the Pyeongchang Winter Games, and 45 were present in the IBC and provided with Unilateral Commentary Signals via MADI or AES / EBU link.
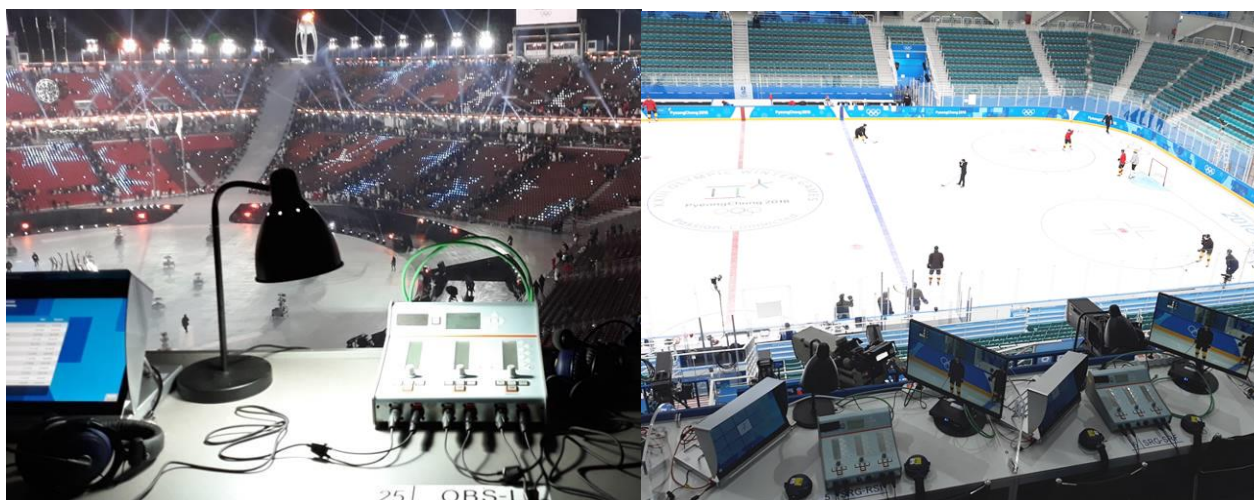
The magnitude of a system like this is difficult to comprehend. In excess of 100 BC2000D chassis with 268 redundant fiber MADI interconnection links and high-speed links with capacity of 1024 Audio channels were deployed to inter-connect audio distributors and concentrators.

Intercommunication circuits between RHB commentators, Commentary System operators and supervisors at the IBC and Venues are accomplished through the AEQ VoIP card (BC2219) that is integer part of the Commentary System and is installed in frames where so required. The card acts as a communications interface between the SW control system and the PC's audio ports system, including commentary positions. Thus audio communications are maintained within the overall TDM system but in a format that makes it possible to convert a PC or a Laptop intercom terminal.

The complete system was controlled by a "suite" of software and according to the required functions for each different type of operator in charge of delivering the services for example, merely monitoring and quality control to operators at Venues who need to make adjustments and assist the talents that provides the signature commentary for their unilateral audio coverage of the competition.

The system offered a full range of audio signal processing functions as for example compressor / limiter, expander, noise gates, high pass filters or low gain level processors etc. and that can be applied to each audio input of the system without limiting the total number of system processes, i.e. any signal can be processed in the system.

As mentioned above, this was the third time this system was deployed at an Olympic Winter Game and the fifth counting in the Summer Games.

2018 EUROPEAN FIGURE SKATING CHAMPIONSHIPS, MOSCOW. RUSSIA.

MX1's is a leading global media services provider. Based in Tel Aviv the offer live events/production services, bundled with global distribution services via MX1's global network, optimising satellite, fibre & IP delivery to reach the widest possible audience.Sport Division provides 24/7 customer service in multiple languages, full project & technical management & production expertise. Recently, Mx-1 has provided a contribution to several asian countries with live broadcasting of the International Ice Skating Competition held in Moscow.

The contribution was provided off tube and managed by Avi Bozo, head of Technical Solutions in MX-1 Sport Division.

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AEQ
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AEQ'S COMMENTARY SYSTEM WAS USED FOR AUDIO BROADCASTING IN 5TH ASIAN INDOOR GAMES 2017. TURKMENISTAN.

Ashgabat (Turkmenistan) held the 5th Asian Indoor Games during September 2017, within the city's new Olympic complex. This area comprises 30 buildings, including the Central Stadium, Aquatics venue, Velodrome, Judo pavilion, Athlete's village and the International radio and television Broadcasting Center (IBC).

During two weeks, more than ten thousands athletes from 17 different Asian and Oceania countries competed for medals in 21 different sports such as tennis, chess, weight lifting, fighting, etc.

The organizing committee selected AEQ digital technology to build the complete commentary audio system during the celebration of these games. The selected platform was AEQ OLYMPIA commentary system, thanks to its ability to cover large sports events (managing up to 5000 independent audio channels), its high reliability -featuring redundant options for each of its components- and its proven solvency in many similar events as demonstrated by AEQ references such as Olympic events, football world and European cups, athletics world championships, etc.

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AEQ Olympia commentary system comprises the commentary positions, together with several micro-headphones connected to each one, the BC2000-D system frames and some software tools.

BC2000-D frames hold different kinds of specialized modules: system controllers, DSP, analog and digital input/output, MADI Multichannel digital links, IP intercom and monitoring and commentary position control cards.

The most important software application is the commentary position controller (Virtual CCU). Sometimes, other tools are used, such as circuit testers and IP intercoms. The system is fully tailored to the customer's requirements.

The complete system included 52 commentary positions, some of them deployed permanently in 10 fixed locations, while others were dynamically distributed among the rest of venues. These commentary positions were connected to 23 BC2000-D frames where the audio signals are concentrated, processed and distributed. Also, 40 AEQ Phoenix audiocodecs were installed to transmit the commentary audio signals from the IBC to each broadcaster's central studio in Ashgabat during the competitions.

The deployed architecture allows for total system integration, permitting either centralized or local control according to each particular need, with no hardware modifications required.

In order to ensure the successful project's completion, AEQ has sent, during the last 3 years, several specialists from Madrid to Ashgabat, leaded by CTO Jose Antonio Martinez, in order to collaborate during the installation, start-up and configuration phases and, finally, during last September, an important human team was also deployed to provide technical service and system operation.

2016 OLYMPIC GAMES, RIO DE JANEIRO.

Over 1.100 commentary units of AEQ's Olympia Commentary System were deployed at the Games in Rio de Janeiro. Servicing the majority of the well over 1500 commentary positions that the Host Broadcasting Organisation for the games were offering the Rights-holding broadcasters for their unilateral commentary audio production.

This was the fourth time that the AEQ Olympia commentary system was deployed at an Olympic Games.

Based upon the BC2000D routing systems and with a total routing capability of over 5000 x 5000 cross-points, the system contains all the necessary elements for interconnection of all the competition venues and the International Broadcasting Centre through long range MADI links over fiber networks. Control of the Commentary System is both local and centralized at the International Broadcast Centre, where all the signals are converging for Distribution to the RHB's.

Irish public broadcaster RTE provided the coverage for the Rio Olympics and Paralympics. The 16 channels of commentary audio

that RTE was producing in Rio through the fully equipped commentary positions from OBS at the different venues were channelled through the 8 AEQ Phoenix VENUS IP AudioCodecs that RTE had acquired for the occasion. Logically, four of the Codecs were located at RTE's installations in Dublin and the other four in the RTE's Rio IBC facilities. The Control Phoenix Management Software application allows RTE to have full control of the Codecs both in Rio and Dublin and on the same computer, making operations very convenient and easy.


Each AEQ Phoenix VENUS is capable of establishing 4 simultaneous bi-directional mono channels to two different destinations so the 16 channels of commentary audio fitted snugly into the 4 Units at each end.

Claro Sports deployed in Rio to produce its unilateral coverage based off OBS' multilateral production. The signals of the finished product were provided to all the different distribution platforms for 17 countries. Also, Claro Sports undertook to provide the commentary audio channels in Spanish language for OBS' multilateral coverage services; Multi-Channel Distribution Service and Olympic Video Player.

Claro Sports' deployment included an AEQ ARENA / BC2000D audio routing and mixing system for signals originating at the venues where Claro Sports had booked fully equipped commentary positions as well as from 13 of the OBS off-tube cabins in the IBC. These latter were providing OBS' OVP services with Spanish commentary. Claro Sports used a full bandwidth AEQ ConeXia intercom system with DANTETM AoIP multi-channel networking simultaneously and on the same BC2000D matrix platform and that assured a perfect coordination between Claro Sports' talents at the commentary positions of the different venues and technical personnel both in Rio and Mexico. The IBC installations also counted on 10 Intercom user-panels Kroma TP8116 series from AEQ connected through a DANTETM multi-channel AoIP Network. Furhter, the ConeXia Intercom system was equipped with analogue 4-wire interfaces to connect a total of 42 intercom devices such as CCU's, Belt-packs and dedicated IFB's.

Additionally, Claro Sports installed two Off –Tube booths within its premises at the IBC to meet additional demands for commentary without having to make use of bookable positions. Given the flexibility and versatility in combination with its input and output options for almost any situation, the Off-Tube booths were equipped with the portable AudioCodec AEQ Phoenix Alio as a commentary unit.
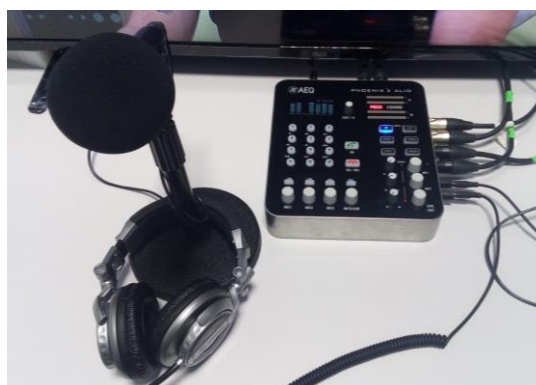
For control and mixing of the International Sound packages delivered by OBS in MADI format with the Spanish Language Commentary audio, Claro Sports used an AEQ ARENA digital console with 15 motorized faders and capability of up to 9 pages. A multi-channel DANTETM AoIP network was installed to link the mixing console with the main Audio Matrix and the ConeXia Intercom System, including the TP8116 User Panels installed in Continuity control and the two live TV sets of Claro Sports at the IBC and their studio in the Olympic Park.

Quality control was accomplished with an AEQ CAPITOL IP mixing console connected to the AoIP Network in combination with DANTE™ Virtual soundcard application installed on computers for the discreet monitoring of any signal available on the AoIP multi-channel network.

28 sports
98 Medal events, all live and in HD
34 competition venues
2.800+ hours of live sports, 7.100+ hours of content produced
456 hours of coverage streamed ONC

8.000+ employees to provide television and radio coverage of the Games
1000+ cameras
1.100 commentary positions (including positions partially equipped)
79 Rights Holding Broadcasters + sub-licensees
85.400 square meters of function space in the IBC, 79.000 Broadcast Space

COMMENTARY SYSTEM USED AT THE IAAF WORLD CHAMPIONSHIPS IN BEIJING 2015 RELIED ON AOIP MULTICHANNEL NETWORK SOLUTIONS FROM AEQ.

The IAAF World Championships, Beijing 2015 took place between 22 and 30 August 2015, was primarily hosted in the Bird's Nest, which was the venue for the 2008 Olympic Games and is the setting for the annual IAAF World Challenge meeting. The IAAF World Championships will become the biggest sporting event on the planet when 2015 ends. 2000 athletes from over 200 nations assembled in Beijing for nine days of competitions that were broadcasted to an accumulated audience of 6 billion worldwide.

AEQ provided all the Commentary Units for the fully booked commentary positions at the IAAF WC 2015 in Beijing. CCTV was acting as the Host Broadcaster (in consortium) and the Championship was held at "the Birds nest" or the National Stadium that was built for the 2008 Olympic Games.

This was actually the second time that the AEQ commentary gear has been at this stadium, but on the occasion of the Olympics in 2008, the setup was in all aspects much more complicated. It was a larger system and much more complex system and the connections between the Commentary Control Unit frames (CCUs) in the Commentary Control Room (CCR), the Broadcast Compound and the International Broadcast Centre (IBC) were of a completely different scale. At that occasion we had to rely on traditional Telecoms infrastructures such as E1 Audio Multiplexer systems (also supplied by AEQ) and similar.

For the IAAF WC 2015 the system was much smaller and also simplified. In the opinion of the writer it was also much more efficient in terms of what is needed in both time and resources to be deployed, thus impacting very positively in the number of man-hours required for planning, Installation, setup, operations and maintenance and eventually dismantling.

The way that the Commentary System was deployed and installed was in essence the same as back in 2008, but the transport of the uni-lateral signals from the CCUs in the CCR to the Commentary Switching Centre in the IBC were significantly simplified. The CCUs in the CCR presented the unilateral commentary signals to the AEQ NetBOX 32 Audio Interfaces and network nodes. These were connected to a standard, managed gigabit switch with fibre links. Two redundant and diverse dark-fiber paths linked the CCR with the Commentary Switching Centre (CSC) in the combined IBC/Broadcast Compound and where a pairing set of managed switch and NetBox 32's. From here the signals are distributed to the RHBs in Analogue or Digital. AEQ and the Host
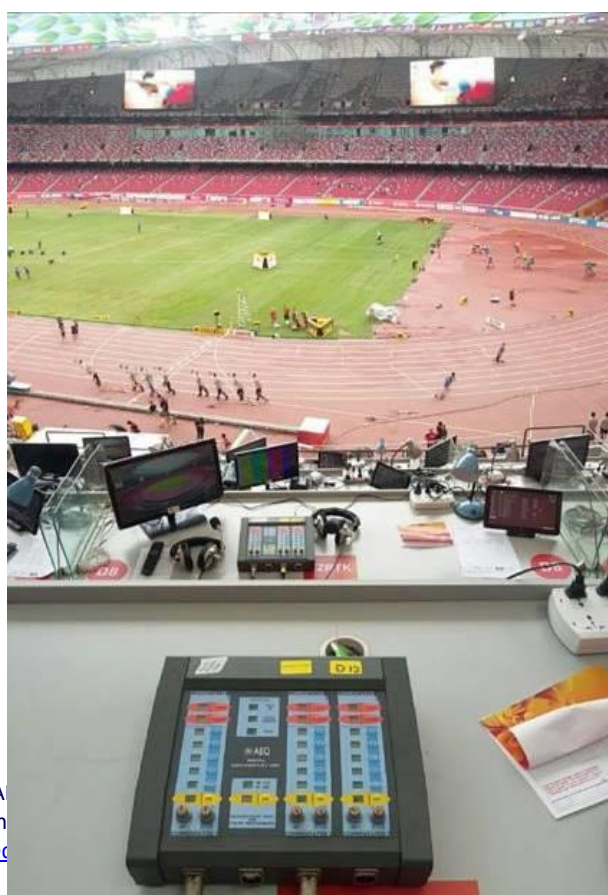
Broadcaster would have loved to be able to give them a port on a standard Gigabit Network Switch, but there are still a few RHBs that don't have AES67 or Dante™ compatible equipment and the HB rate-card did not include this option. Since the system is bi-directional there was obviously a return path from the RHBs IBC facilities to the CCR via the commentary Switching Centre.

n order to control and monitor the system signals, Dante™ Controllers and DANTE Virtual Sound cards on computers were used at both locations (CCR and CSC), This allowed for both the control of the signal paths and to monitor the commentary signals Program Go and F'back, Coordination Go and F'back, International Sound, Auxiliar, Guide, etc. Further the International Sound (IS1 for TV and IS2 for Radio) for the commentators was produced in the Compound and was conveyed to the the CCR using the same signal path as the RHB coordination and return signals. All the other required signals that were also common signals for the commentator, such as PA and two CUE signals were also available through this Dante™ Multichannel IP Audio Network.

Part of the international PoP was located in the same area as the CCR. And weather or not the RHBs were using ISDN or IP connectivity or not, all the signals were coming on the same signal path as previously described and were routed to the AEQ Phoenix Stratos IP and ISDN codecs. This part of the system provided for the International connectivity of the Commentary signal and bi-directional program and coordination with the RHB facilities in the IBC and the Commentary positions in the stadium.

The beauty of the system is that it can be built as a very simple "isolated" network, where the system clock is generated by one of the NetBox 32's. The same network was also used for control and management of for example the commentary control unit frames, the AEQ Phoenix Stratos multi-format AudioCodecs - including signal monitoring. With full control of this network it is very simple to establish the necessary responsibility demarcation points.

For the setting-up, testing and operations, AEQ sent two of its engineers, Luis Hernandez and Javier Muriel to lead and assist the teams of the Host Broadcaster and its main contractor - CSS-Group at the Beijing national stadium. These companies undertook the tasks to provide the services and broadcast signals to the world broadcasting community with great professionalism.

From these lines we would like to express its gratitude to CCTV as the acting host broadcaster and CSS-group for the trust deposited in AEQ.

TECHOLOGY FROM AEQ-KROMA AT THE FIRST EUROPEAN GAMES HELD IN BAKU 2015, AZERBAIJAN

The 2015 European Games were held in Baku, Azerbaijan, between 12 and 28 June 2015. It was the inaugural edition of this multi-sport event for athletes from the European federations of athletics and with similar characteristics to the Games Pan American or Asian Games. These Games drew more than 6,000 athletes from 50 NOCs competing in 20 sports in 253 events held in their 15 respective venues and stadiums. The Spanish delegation finished in an outstanding tenth place ranking in the medal table with 8 gold, 11 silver and 11 bronze medals.

International Sports Broadcasting - ISB – was appointed Host Broadcaster of the games and the producer of the multilateral signals for radio, television and internet and also the coordinator of all the broadcast unilateral services for the event. When appointed Host Broadcaster for the event, ISB selected AEQ and its engineering and consultancy company, Broad Services, as providers of numerous solutions for this major broadcast project.

AEQ contributed both with both audio and video equipment, with for example, digital audio mixing consoles AEQ CAPITOL as part of the commentary audio systems, communications with AEQ Phoenix VENUS and MOBILE deployed in most stadiums and venues. Also to be mentioned, AEQ provided a great quantity of broadcast monitors "KROMA by AEQ" used in the numerous technical operations centers. Further, AEQ provided consultancy, engineering and integration services for the broadcast

telecommunications equipment in the technical operation centres at the venues. This equipment was housed in flight-cases designed to be ready for transport and allowing for the deployment and operation within minutes upon arrival at the venues.

The supply was completed with an AEQ DCS-10 Commentary System used for all "off-tube" booths at IBC. The system also rendered commentator service for the host organization for the news channels and direct feeds available during events for, for example, ASBU - Arab Broadcasting Union and English speaking Broadcasters.

For the broadcast telecommunications at the technical operation centers -"TOC's", that is, the equipment necessary for the transport and control of Multi- and Unilateral signals generated at the Venues, ISB trusted AEQ and its affiliate Broad Services with the task of the engineering, integration, installation, cabling and supply of 18 Fly-packs for these functions. Apart from the transmission and reception equipment using dark fiber for the HD Video and Audio signals, all systems were supplied with "KROMA by AEQ" 3G-capable Broadcast monitors in formats ranging between 9 "and 18.5".

AEQ also supplied a system capable of receiving signals from all the venues and distribute the signals both to the different production areas of ISB in the IBC, as well as to the different broadcasters at the IBC.

To optimize space and monitoring needs, the preferred and monitor deployed was the Quad-split QS7018. Apart from the functions of Quad-split, this monitor has a number of functions and measurement instrumentation that facilitates and simplifies an operation of this type.

Included in this equipment for the "TOC's" and necessary for the communications, AEQ supplied ISB with 36 units of AEQ Phoenix VENUS dual channel IP audio codecs to create the circuits for technical coordination between the Venues and production control at the IBC. Another 5 units AEQ Phoenix VENUS were used to transport the program signal generated in mixed zones of the venues. The chapter of

communications was completed with the AEQ Phoenix MOBILE, portable IP audio codec, as the commentary unit for each of the Venues fully equipped commentary positions.

The broadcast monitors "KROMA by AEQ" in formats from 9 "to 18.5" were present in all the studios, technical operation centers and production controls at the I Baku 2015 European Games.


Given the magnitude of the event, a technical team was sent to Baku by AEQ and was lead by the engineers Jennifer Suarez and Luis Hernandez, for all phases of installation, commissioning, training, operation supervision and technical assistance during the event.

SOCHI 2014 WINTER OLYMPIC GAMES

As well known AEQ has participated in a significant way at major sporting events, providing equipment and services to the global broadcast community. Again, AEQ played an important role in providing the audio of the commentators in the biggest winter sporting event in Sochi.

With over 80 Rights Holding broadcasters on site to cover winter sports event par excellence, the host broadcaster, Olympic Broadcasting Services, displayed the best of the best in production equipment. This included a total of 532 AEQ Olympia latest generation of commentary positions.

It should be clarified that this commentator system was not only consisting in a number of positions for the journalists, but also a very complex routing, transport, distribution and control system for the audio signals between the 11 competition venues and the Mountain Broadcast Center (MBC) in Krasnaya Polyana and the International Broadcasting Center (IBC) in Sochi. The MBC is deployed and set to provide a more dedicated service to the venues that are in the mountain area as for example the Alpine and Nordic skiing centers.
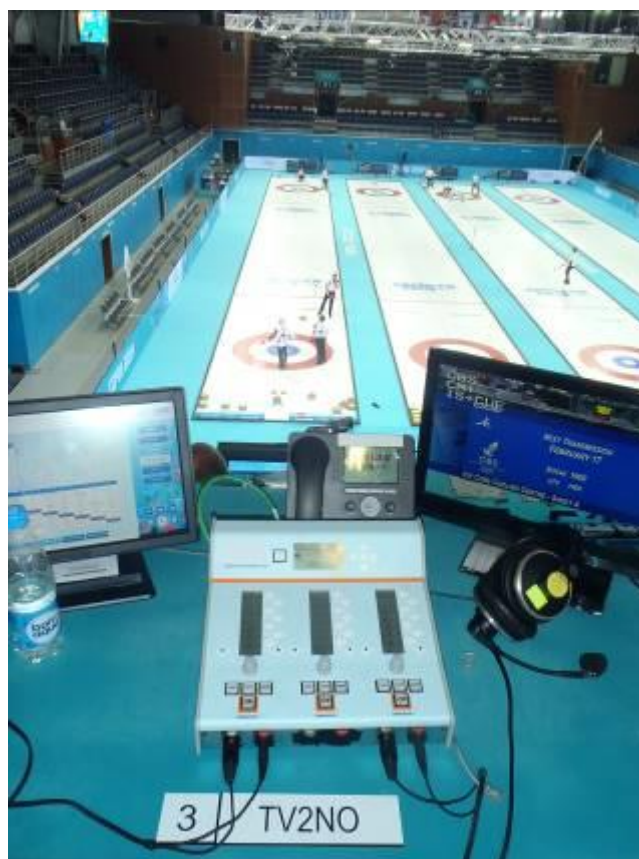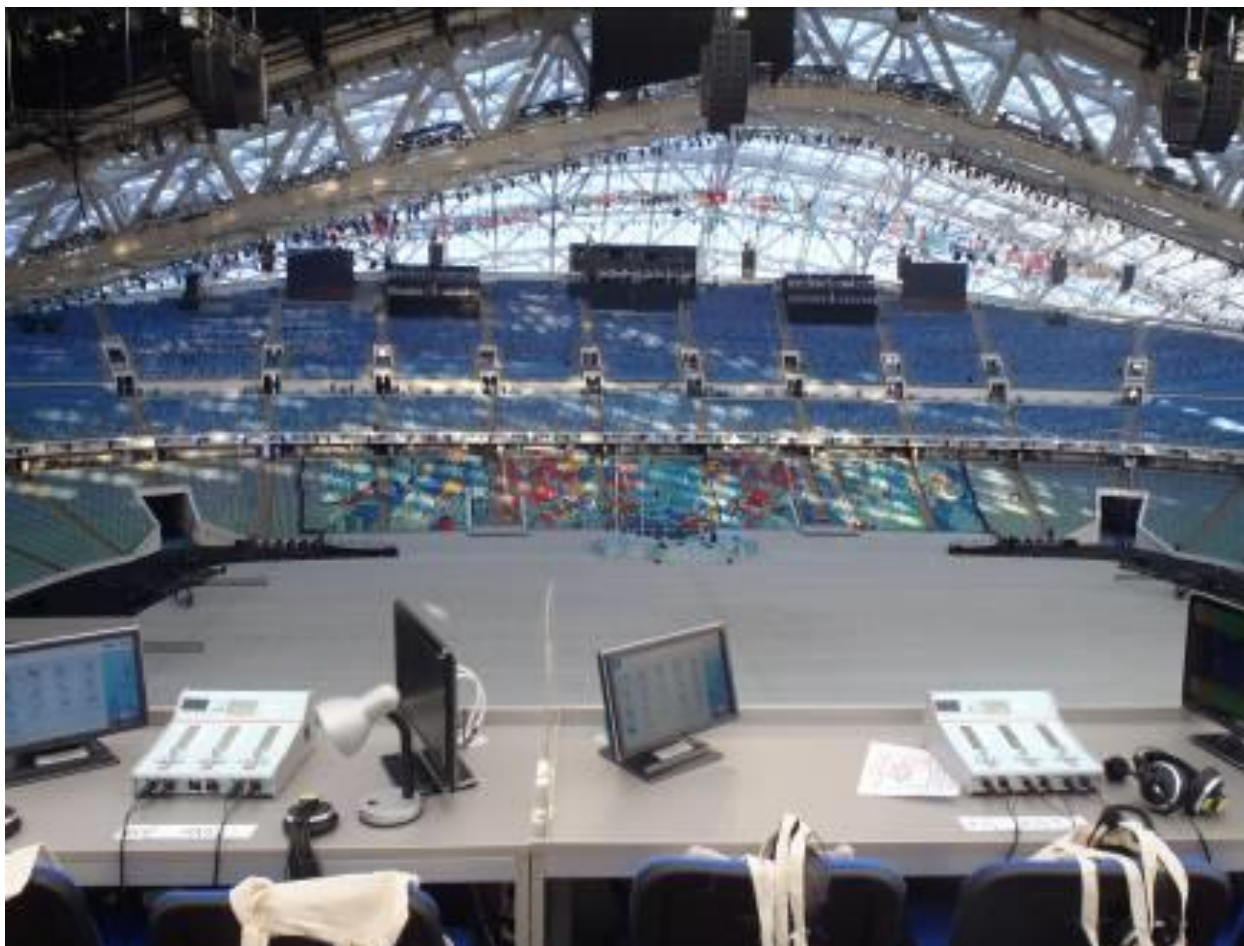

Of the more than 80 international broadcasters deployed in Sochi, about 55 were equipped with an AEQ digital audio panel (DAP) at their facilities in IBC or MBC. The DAP consist in of a chassis BC2000D router and fitted with audio input and output cards to comply with the requested services and audio channels provided by the Host Broadcaster, including those from the commentary positions at headquarters. Broadcasters

without DAP Audio signals received via a MADI or AES / EBU link to their own computers.

The magnitude of such a system is difficult to digest. Over 100 BC2000D chassis with 221 redundant fiber MADI interconnection links and 28 high-speed links with capacity of 1024 Audio channels were deployed to inter-connect audio distributors and concentrators. The whole system has the redundant capacity equivalent to 5000 x 5000 circuits of which were used about 1,600. Only the redundant power supplies used have a combined capacity of about 110,000 W!

Interconnectivity for operators and supervisors of IBC, MBC, the Venues and the commentators, an AEQ VoIP card (BC2219) was installed in the system chassis where required. The card acts as a communications interface between the SW control system and the PC's audio ports system, including commentary positions. Thus audio communications are maintained within the overall TDM system but in a format that makes it possible to convert a PC or a Laptop intercom terminal. About 120 cards with VoIP capacity for 20 bidirectional channels each were used. This alone would amount to an intercom with a capacity of 2,400 ports!

The complete system was controlled by a "suite" of software and according to the required functions for each different type of operator in charge of delivering the services for example, merely monitoring and quality control to operators at Venues who need to make adjustments and assist the talents that provides the signature commentary for their unilateral audio coverage of

the competition. The system offered a full range of audio signal processing functions as for example compressor / limiter, expander, noise gates, high pass filters or low gain level processors etc. and that can be applied to each audio input of the system without limiting the total number of system processes, ie any signal can be processed in the system.

For the global control of this, a dedicated network of more than 600 data IP addresses had to be created. That's a lot of planning for 16 days of competition. This part of the system is critical. In order to configure and deploy a system of this size temporarily but with all the redundancy that is needed for an event like the Olympics, it must have adequate and powerful tools. The system has a planning SW allows to accurately estimate the amount of required hardware, configuring ports and necessary links, sub-systems and redundancies. Nothing is left to chance. The SW has a complex data base to accommodate all possibilities, including possible exceptions. Once the planning phase is completed and is physically configured each chassis necessary, the SW is used to send the operational settings.

It was the third time this system was used for an Olympics and the second winter games.

AEQ has equipment and qualified expert staff for worldwide coverage of major sporting, political and social events, having supplied equipment for more than 20 years in all Olympic Games, World Cup, athletics, swimming, skiing, etc ...

Sochi Winter Olympics summarized in figures of the Host Broadcaster:

7 sports
15 disciplines
98 Medal events, all live and in HD
11 competition venues
5 non-competition venues
1.300+ hours of live sports, ceremonies and ONC (Olympic News Channel)
456 hours of coverage streamed ONC
1.150+ hours of programming Multichannel Distribution Service (MDS), excluding ONC.

Approximately 2,700 employees to provide television and radio coverage of the Games
450+ cameras
700 commentary positions (including positions partially equipped)
700 seats for observers (Radio and TV)
80+ Rights Holding Broadcasters
40,000 square meters of function space in the IBC
5,000 functional square meters in the MBC (Mountain Broadcast Centre)

IAAF WORLD CHAMPIONSHIPS, MOSCOW 2013.

Between the 10 and 18 of August, 2013, IAAF organised the World Championships in athletics in the famous Luzhniki stadium of the Russian capital.

The stadium with a total capacity of +78.000 spectators became the home for 1.970 athletes representing 206 national federations and the worlds broadcasting community that were covering the event.

Eurovision was entrusted the task of acting as Host Broadcasting Organisation and readily asked AEQ to provide 40 Commentary Units of the AEQ DCS-10 commentary system to provide the necessary unilateral commentary audio services. Eurovision also used the BC2000D audio multiplexers to offer the necessary E1 links for its members and the Phoenix Studio AduioCodec platform to offer the international distribution of Commentary Audio to the Rights Holding Broadcasters through either IP or ISDN networks.

FINA WORLD CHAMPIONSHIPS, BARCELONA 2013.

The XV FINA World Championships were celebrated in Barcelona (Spain) between July 19 and August 4, 2013.

A total of 2.293 athletes from 181 countries participated in the different federated disciplines of the International Federation of Swimming (FINA) – Swimming, Open waters swimming, synchronized swimming, diving and water-polo.

The national Spanish television –TVE acted as Host Broadcaster and produced the multilateral feeds for Radio and Television. For the unilateral commentary services TVE, used the AEQ DCS-10 digital commentary system to furbish the fully equipped commentary positions at the different venues of the event.

2012 OLYMPIC GAMES, LONDON.

Over 1.000 commentary units of AEQ's new generation Commentary System were deployed at the London Games. Servicing the majority of the 1.275 commentary positions that the Host Broadcasting Organisation for the games were offering the Rights-holding broadcasters for their unilateral commentary audio production.

This was the second time that the new generation of AEQ commentary system was used in an Olympic Games.

Based upon the BC2000 routing systems and with a total routing capability of over 5000 x 5000 cross-points, the system contains all the necessary elements for interconnection of all the competition venues and the International Broadcasting Centre through either E1/T1 networks or through long range MADI links over fiber networks.

Also on this occasion, EBU was one of the major rights holding broadcaster unions and took delivery of additional modules for its BC2000 D Router Matrix that is used for their 4W commentary circuits.

Equipment upgrade included among other things the implementation of AoIP intercom and monitoring facilities and the capacity to receive the commentary signals from the Host Broadcasters Commentary System.

XIV IAAF INDOOR WORLD CHAMPIONSHIPS IN ATHLETICS, ISTANBUL, TURKEY. MARCH 2012.

BETWEEN MARCH 9 AND 11 THE XIV IAAF INDOOR WORLD CHAMPIONSHIPS IN ATHLETICS WERE HELD IN ISTANBUL.

An intense 4 days of competition gathered athletes representing 170 countries, in 26 different sports. The host broadcaster TRT (Turkish public broadcaster) for the 2012 IAAF World Championships was decided to provide world class services in general. Their choice of AEQ was made after carefully evaluating renowned companies and with proven track record. AEQ was requested to propose a solution and after carefully studying the options and the available telecoms structure, recommended the use of its DCS-10 commentary system in combination with the AEQ Phoenix Studio IP and ISDN audio-codecs for international contribution.

For the fully equipped – full service commentary positions at the Atakoy Athletics Stadium, AEQ supplied a total of 20 Commentary units for up to three commentators and one guest.

Additionally for international contribution AEQ supplied 20 PHOENIX STUDIO, a multi-format, multi-algorithm dual channel audio-codec designed for stationary rack-mounted applications, like links between studios or STL. PHOENIX STUDIO offers the options of working over ISDN and IP networks and provides two simultaneous channels with high quality Audio, in independent dual mono formats or stereo, or in a combination of both.

AEQ in coordination with local partner IDEAPRO also provided system maintenance from set-up through games time, and ten AEQ TLE02-D portable audio-codecs for backup or last-minute extra stand-alone commentary positions.

PANAMERICAN GAMES 2011, GUADALAJARA, MEXICO

Between October 14th and 30th , 2011 the Panamerican Games were held in the city of Guadalajara in Mexico. Athletes representing the 42 different countries were competing during two weeks in the 24 venues hosting this great sporting event event. .

The host broadcaster of the event, International Sports Broadcasting, was decided to provide its customary world class services. The choice of AEQ was easily made considering AEQ's more than proven track record.

After studying different options and the available telecoms structure, ISB decided to use the DCS-10 commentary system in combination with the AEQ RANGER E1/T1 Audio Multiplexer systems for venues interconnectivity. Among the reasons why the choice of gear fell on AEQ was the very long and proven track record of service that the AEQ equipment offers together with the ease of maintenance and installation. The DCS-10 has been in service for the commentary systems at most of the worlds largest sporting events since 1998 and the RANGER Multiplexers since year 2000.

For the fully equipped – full service commentary positions at the different venues, AEQ supplied a total of 60 Commentary units for up to three commentators and one guest. The DCS-10

Commentary unit provides very easy to use intercom and talk-back facilities, enabling the commentator to be in communication with his home studio through both Programme and Coordination circuits and with the local commentary technician. For monitoring, the commentator can choose any mix of his own Programme and Programme return, PA, International Sound, Guide and/or Auxiliary channel. Further, the unit allows the commentator to choose for which ear what signal is to be present in his headset. without having close the programme circuit.

For venues interconnectivity, AEQ also supplied 22 RANGER MULTIPLEXER SYSTEMS. The Multiplexers offer selectable Audio encoding/de-coding algorithms adapting perfectly to the different needs regarding level of service required. Audio bandwidths from 3,5 Khz in Mono to 15 Khz Stereo can be offered in any combination and providing up to 62 Channels per E1 connection. Further, for the technical operations intercommunication between the Commentary Control Rooms at the different venues and the Commentary Switching Centre at the IBC, the AEQ analogue Intercom systems IN-02 and IN-03 were used.

AEQ also provided system maintenance from set-up through games time.

2011 FINA WORLD CUP

The 14th FINA World Championships were held at July 16–31, 2011 in Shanghai, China at the Shanghai Oriental Sports Center. The 2011 World Championships featured five aquatics disciplines: swimming, water polo, diving, open water, and synchronised swimming. At this championships, scryncronized swimmer Natalia Ishchenko, of Russia, was the most decorated competitor winning all six gold medals of her events, at solo, duet and team routines. These championships served as qualifying stages for the 2012 Summer Olympics.

AEQ provided to host broadcaster 55 AEQ TLE02-D portable audiocodecs and 110 professional headsets to be used like commentary position.

2011 FIFA U-20 WORLD CUP

The 2011 FIFA U-20 World Cup (Spanish: Copa Mundial Sub-20 de la FIFA Colombia 2011) was the eighteenth edition of the FIFA U-20 World Cup since its inception in 1977 as the FIFA World Youth Championship. Colombia hosted the tournament between 29 July and 20 August 2011, with matches being played in eight cities. The tournament was won by Brazil who claimed their fifth title.

In late 2009 the Colombian Football Federation unveiled the budget for conducting the event, to be COP 150 billion[6] (USD 75 million). An estimated 1,021,000 tickets have already been sold, including a complete sell out of all matches that are to take place at the Estadio Nemesio Camacho in Bogotá

AEQ provided to RCN (host broadcaster) 10 AEQ TLE02-D portable audiocodecs and 30 headsets to be used like commentary position.

IAAF WORLD CHAMPIONSHIP IN DAEGU, KOREA 2011

Between August 27 and September 4, 2011 the World Championships in Athletics were held in the city of Daegu in South Korea. With over 1900 athletes representing 202 countries, the event has been the largest broadcasting event covering athletics in 2011.

The host broadcaster consortium for the 2011 IAAF World Championships, were decided to provide world class services in general. Their choice of AEQ was made after carefully evaluating renowned companies and with proven track record.

AEQ was requested to propose a solution and after carefully studying the options and the available telecoms structure, recommended the use of its DCS-10 commentary system in combination with the AEQ Phoenix Studio IP and ISDN Audio-codecs for venues interconnectivity and international contribution. The DCS-10 has been the used for the commentary in most of the worlds largest sporting events since 1998. Contrasting to this, the Phoenix Studio saw its first appearance for a big event. The need to be able to offer a complete service to the world broadcasting community from a sole supplier with experience and the operational know-how for this type of events, were also among the reasons why the definitive choice of gear fell on AEQ.

For the fully equipped – full service commentary positions at the Athletics Stadium and outside races starting venue, AEQ supplied a total of 35 Commentary units for up to three commentators and one guest. The DCS-10 Commentary unit provides very easy to use intercom and talk-back facilities, enabling the commentator to be in communication with his home studio through both Programme and Coordination circuits and with the local commentary technician. For monitoring, the commentator can choose any mix of his own Programme and Programme return, PA, International Sound, Guide and/or Auxiliary channel. Further, the unit allows the commentator to choose for which ear what signal is to be present in his headset. without having close the programme circuit.

For venues interconnectivity and international contribution AEQ also supplied 35 PHOENIX STUDIO, a multi-format, multi-algorithm dual channel audio-codec designed for stationary rack-mounted applications, like links between studios or STL. PHOENIX STUDIO offers the options of working over ISDN and IP networks, among many others. The IP communications interface is fully compatible with the EBU-TECH 3326 technical specification issued by the EBU N/ACIP working group.

.FIFA U-17 WORLD CUP IN MEXICO 2011

When Televisa SA de CV was commended with the task to act as the Host broadcaster for the U-17 World Cup (soccer) in Mexico this summer, they were on the clear with that the choice of equipment had to be world class and with a proven track record.

AEQ was requested to propose a solution and after carefully studying the options and the available telecoms structure, recommended Televisa to use the MPAC-02. Even if this work horse from AEQ has been in production for 12 years, the features and services required were perfectly met by the AEQ MPAC-02; up to three commentators, auxiliary mic/line input providing an additional local audio source and the possibility to transmit over ISDN, PSTN and including V.35 ports for dual audio channel connectivity, etc., etc. The need to be able to offer simultaneous independent program and coordination circuits with return paths were also among the reasons why the definitive choice of gear fell on AEQ.

GUANGZHOU 16th ASIAN GAMES 2010

Equipment supply and maintenance: 280 AEQ DCS-10 commentary units and Ranger E1/T1 Audio Multiplexors for contribution network interconnections. Further, some 90 TLE-02D portable ISDN audiocodec were used to interconnect the smaller venues with the IBC through ISDN lines.

All the interconnections of the 51 stadiums to the IBC were done through 2Mbps E1 links using AEQ RANGER multiplexers, and ISDN lines with the AEQ TLE-02D Portable audiocodec.

VANCOUVER 2010 WINTER OLYMPIC GAMES

AEQ produced and delivered the new generation of commentary system based upon its BC2000 routing systems and with a total routing capability of over 5000 x 5000 cross-points. The system is containing all the necessary elements for interconnection of all the competition venues and the International Broadcasting Centre through either E1/T1 networks or through long range MADI links over fiber networks.

EBU being one of the major rights holding broadcaster unions took delivery of additional modules for its BC 2000 D Router Matrix that is used for their 4W commentary circuits. Equipment upgrade included among other things the implementation of the capacity to receive the commentary signals from the New Commentary System used in Vancouver. Additionally, all the EBU broadcasters and other major rights holding organisations were using AEQ's Commentary Console at the different Competition Venues.

CAF AFRICAN CUP 2010, ANGOLA

Services: 100 AEQ DCS-10 commentary units. Course AudioCodec systems and Ranger E1/T1 Audio Multiplexors for contribution network interconnections. Installation, maintenance and operation.

AEQ provided complete installation and operation of the total commentary system for four stadiums and a modern International Broadcasting Center to centralize all the communications. Luanda stadium has 40.000 seats and uses 40 CU. Bengela, Lubango and Cabinda stadiums have 20000 seats and use 20 CU each. All the interconnections of the stadiums to the IBC are done over 2Mbps E1 links using AEQ RANGER multiplexers, and the external communications use ISDN lines over AEQ COURSE multi-codec.

BEIJING OLYMPIC GAMES 2008 CHINA

Equipment and Services: 1200 AEQ DCS-10 commentary units and Ranger E1/T1 Audio Multiplexors for contribution network interconnections.

Once again, AEQ played a significant role as the supplier of commentator audio equipment for the 2008 Beijing Olympic Games.

Since the Nagano Games in 1998, commentators at the various competitive venues have used AEQ's DCS 10 Digital Commentator consoles, giving them the ability to accommodate three reporters plus a guest.

As has been the case since the Sidney Games in 2000, AEQ's Ranger Multiplexers were used to broadcast program and coordination information (and the returns) to the International Broadcasting Center.

The International Broadcasting Center's Commentary Switching Center is where all circuits from the multiple venues are received and supervised. A wide assortment of AEQ products are employed during these events. They include: circuit distribution frames, patch panels, audio distribution amplifiers, intercoms, line identifiers, monitors, audio quality monitors, just to mention a few.

Some of the Olympic broadcasters who used AEQ equipment were: TV AZTECA and
TELEVISA (Mexico); Radio Caracol (Colombia); ENTV (Algeria); RTRRA (Russia), ROR (Romania), SABC (South Africa), RTVE (Spain), France 2; Globo (Brazil) and NHK (Japan).

17 ALFACAM OB Vans were used at the multiple venues and the Olympic Stadium to produce HD video had AEQ equipment installed as part of their equipment suites. The most frequently used

equipment items were: DA-26, EAGLE, SWING, MPAC-02, Mar4Win, TLE 02, Ranger, and the ACD 5001.

Special mention goes out to the European Broadcasting Union, EBU (EUROVISION), and the primary broadcasters association. For many years the EBU has used AEQ's Impact Digital Switching Center and Course Codecs to deliver audio from the Games.

EBU's Switching Center in Beijing includes AEQ's Impact, Course, and BC 2000D equipment. RNE's engineer Javier Ferreras is operating the equipment.

FIBA, BASKETBALL WORLD CHAMPIONSHIP, JAPAN 2006.

Equipment supply: 41 AEQ MPAC-02 commentary units supplied to the Host Broadcaster, Japan Broadcasting Corporation (NHK).

AEQ supplied 41 MPAC 02 codecs to the Japan Broadcasting Corporation, NHK, in order to broadcast the FIBA Basketball World Championship, which was hold in September of 2006, by the commentators of the different televisions that attended this event.

AEQ continues its participation in the supply of equipment for big sports events, that begun at the Olympic Games in Seoul 1988 and that is continued uninterruptedly in these last 18 years.

TORINO 2006 WINTER OLYMPICS, ITALY.

Services Rendered: Design, Installation and Maintenance.

Equipment Supply: Delivery of over 750 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the Torino Winter Olympics.

Delivery of the Commentary Switching Centre and 4W intercommunication equipment for Commentary Switching Centre at IBC.

The commentary Switching held the capacity of an equivalent of over 4500 4W circuits.

The Commentary Audio was integrally generated by a Digital Commentary System.

Transmissions on the International Side were integrally carried out through ISDN AudioCodecs.

On the international Side Supplementary contracts were awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

FIBA, BASKETBALL EUROPEAN CHAMPIONSHIP, SERBIA 2005 .

Equipment Supply: delivery of 30 portable audiocodecs AEQ Swing
 and 5 rack-mounted audiocodecs AEQ Eagle.

These equipment have been used in the retransmission of the European Championship of Basketball 2005, which was hold in four Serbian venues: Belgrade, Novi Sad, Vrsac and Podgorica, from 16th to 25th September 2005

ATHENS SUMMER OLYMPICS 2004.

Services Rendered: Venue Cabling Services, Design and Maintenance.

Equipment Supply: Design and Delivery of over 1.000 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the Athens Summer Olympics.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 5.500 4W circuits.

For the fourth time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

Over 130 AEQ Ranger 2 Mb. Multiplexer Systems supplied by AEQ handled transmissions on the National side (Venues to IBC and Vice-versa).

This was the fourth time in History that such specific Audio Encoding/Decoding-Multiplexing Equipment was used for the Transmission of the Commentary Circuits.

Transmissions on the International Side for the European Broadcasting Union were integrally carried out through ISDN AudioCodecs.

Furthermore, on the international Side Supplementary contracts were awarded to AEQ for the same type of equipment from Different Broadcasting Unions and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU and other associations.

UEFA EURO-CUP, PORTUGAL, JUNE 12 – JULY 4, 2004.

Services Rendered: Pre-Cabling Services, Design, Installation, Operation, Maintenance and de-rigging.

Equipment Supply: Design, Delivery, Installation and Operation of 320 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the 10 different Stadiums for the UEFA Euro-Cup in portugal.

The Delivery, Installation and Operation of 320 Dual Channel AudioCodecs Mounted in 32 Course Multiple AudioCodec Frames Completely Software Controlled and the Cabling of the ISDN Intercom Facilities for the 10 different Stadiums for the UEFA Euro-Cup in Portugal.

The design and delivery of all the interconnections and cables for Compound Area and TOC of all the 10 different Stadiums for the UEFA Euro-Cup in Portugal.

All the equipment and interconnection cables relative to Stadiums, TOC and Compounds were dismantled after each Match, to be transported to the next venue or Stadium on schedule, installed and operated the next day.

ROYAL WEDDING H.R.H. THE PRINCE OF ASTURIAS AND DOÑA LETIZIA ORTIZ, MAY 22, 2004.

Services Rendered: Pre-Cabling Services, Design, Installation, and Maintenance.

Equipment Supply: Design, Delivery, Installation and Maintenance supervision o 2x20 ISDN Lines SYSTEL-6000 Multiplex and Multi-conference Systems for the General Coordination System for the OB-Units during the Broadcast Operations in connection with the Event. The Systel-6000 Systems Consists in a total Hardware Integration through Software of the AEQ Impact Digital Audio Router with AEQ Caddy AD/DA Converters and AEQ Course MultiCodec Systems. The two Systems supplied had a total Multiplexing Capability of up to 40 ISDN communications towards the MCR at Prado del Rey and vice versa, and was Hierarchically structured for 12 different levels of Multiplex, i.e. 12 simultaneous multiplex for different levels and purposes.

AFRICAN CUP OF NATIONS, TUNIS, 2004.

Services Rendered: Equipment Supply.

Equipment Supply: Design and Delivery of 10 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Venues at the African Cup of Nations, Tunis, 2003. The delivery eas to complement the already available System in property of the Tunisian Radio and Television, and aqcuired in 2001 for the Mediterranean Games. Additionally 20 AEQ MPAC-02 Portable ISDN AudioCodec and Communications Unit was delivered for the partially equipped Commentary Positions at these venues.

Delivery of our equipment was accomplished through AlfaCam of Belgium, as our main contractor.

CYCLING WORLD CHAMPIONSHIPS, HAMILTON, CANADA, OCTOBER 2003.

Services Rendered: Equipment Supply.

Equipment Supply: Delivery of the EBU (European Broadcasting Union) AudioCodec Systems for the Commentary Audio Circuits. A total of 7 Complete AEQ COURSE Multi-Codec Systems were supplied, equalling to 140 4W Circuits interconnected to EBU's DATA Multiplexer for the international Contribution of the Commentary Signals.

Direct Commentary Unilaterals were Achieved with the AEQ Swing Portable AudioCodec and Transmission Unit. A total of 26 Units were delivered for the Event Through the Eurpean Broadcasting Union.

8TH AAG (ALL AFRICA GAMES), THE UNITY GAMES, NIGERIA, OCTOBER 4-18, 2003.

Services Rendered: Consultancy, Design, Equipment Supply, Installation, Set-up, On-site Training, Operation and Maintenance.

Equipment Supply: Design and Delivery of 110 Commentary Positions of the AEQ DCS-10 Digital Commentary System and the Complete Commentary Switching Centre within the MCR, for all the Venues at the All Africa Games in Abuja, Nigeria, 2003.

The Complete Equipment Delivery was accomplished through Thomson Broadcast Systems, as the Main Contractors to NTA/COJA.

IAAF (ATHLETICS) WORLD CHAMPIONSHIPS, PARIS, FRANCE, AUGUST 2003.

Services Rendered: Equipment Supply.

Equipment Supply: Delivery of the EBU (European Broadcasting Union) AudioCodec Systems for the Commentary Audio Circuits. A total of 7 Complete AEQ COURSE Multi-Codec Systems were supplied, equalling to 140 4W Circuits interconnected to EBU's DATA Multiplexer for the international Contribution of the Commentary Signals.

Direct Commentary Unilaterals were Achieved with the AEQ Swing Portable AudioCodec and Transmission Unit. A total of 14 Units were delivered for the Event Through the Eurpean Broadcasting Union.

VOLLEYBALL EUROCUP FINALS, MADRID, SPAIN, JUNE 2003.

Services Rendered: Equipment Supply through RTVE.

Equipment Supply: Delivery of 20 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Different Venues in Madrid (Spain).

This was the first time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers of this Type.

SWIMMING WORLD CUP BARCELONA, SPAIN, JUNE 2003.

Services Rendered: Equipment Supply.

All in all some 55 AEQ DCS-10 Digital Commentary Positions pertaining to RTVE of Spain (Host Broadcaster for the Event) were installed. The Commentary Audio was entirely transmitted from the event with the AEQ Course MultiCodec System for all the Commentary Positions that were fully Equipped. Alternative Positions were equipped with AEQ MPAC-02 portable Audioodec and Commentary Unit.

CRICKET WORLDCUP, SOUTH AFRICA, FEBRUARY 2003.

Services Rendered: Equipment Supply.

Equipment Supply: Design and Delivery of 30 Commentary Positions of the AEQ DCS-10 Digital Commentary System and 30 MPAC-02 Portable AudioCodec for all the Venues in South Africa. The communications between Venues and IBC and Unilaterals was accomplished through Eagle and Course Multicodec Systems from AEQ.

In January 2002 the South African Broadcasting Corporation purchased three complete AEQ Commentary Systems and three COURSE codec systems to be used at the 2003 World Cup Cricket tournament hosted in South Africa during February 2003. The S.A.B.C. was contracted by the host broadcasting company for the 2003 World Cup Cricket to provide the commentary positions at all the venues. S.A.B.C.'s RPS Remote, responsible for the technical operations of remote broadcasts for the S.A.B.C.'s radio services, will also be using the commentary system for the multitude of sports events that is broadcasted regularly on the various language services. During the same period the S.A.B.C. also purchased approx. 25 AEQ EAGLE codecs and a number AEQ TH-02EX MkII digital telephone hybrids. These units were used at the 2002 World Summit for Sustainable Development, hosted in South Africa in August last year from various venues across South Africa. The AEQ EAGLEs were again used by the S.A.B.C. at the African Union Summit, held in Maputo, Mozambique in July 2003.

FIFA WORLD CUP, JAPAN AND KOREA, JUNE, 2002.

Services Rendered: Equipment Supply and Maintenance.

Equipment Supply: Design and Delivery of over 830 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the 10 Venues on the Japaneese side at the JAPAN AND KOREA FIFA WORLD CUP.

210 AEQ Ranger E1/T1 Multiplexer Systems, effectively comprising of a total number of 850 multi channel AudioCodecs for a total of some 6000 bi-directional High Quality Audio Circuits, was supplied by AEQ. These Systems handled transmissions on the National side (all 20 Venues to IBC1 (Seoul) and IBC2 (Yokohama) and Vice-versa). The Contracts were awarded by KoreaTelecom for the Korean Side of Operations and by Japan Telecom on the Japaneese side, both carriers being the official carriers for the Event.

Also this was the first time in History that such specific Audio Encoding/Decoding-Multiplexing Equipment was used for the Transmission of the Commentary Circuits, as this had until this event been done either through ISDN AudioCodecs or through standard 4W lines provided by the PTT's assigned as carriers. The difficulty on this specific occasion was residing in the fact that on the Korean Side the E1 protocols prevails and on the Japanees side the Systems had to operate on T1. The solutions given by both operators in order to inter-link the two systems in IBC1 in Seoul was considered as optimum since the Audio Encoding Standards were kept intact through the AEQ Multiplexers.

On the international Side Supplementary contracts was awarded to AEQ for AudioCodecs the for EBU Associates and were distributed throughout the World among the EBU Members and other Broadcasters.

FIFA UNDER 18 WORLDCUP, MALI, JUNE 2002.

Services Rendered: Equipment Supply through EuMovil pertaining to MediaPro Group.

Equipment Supply: Delivery of 45 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Different Venues in Mali (Africa).

This was the first time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers of this Type.

SALT LAKE CITY WINTER OLYMPICS, USA, 2002

Equipment supply: AEQ DCS 10 Digital Commentator Consoles. A total of 450 Commentary Units were deployed at the 13 Olympic Venues.

For the transmission of program signals and coordination signals when required, as well as the respective return audio to the International Broadcasting Center, 50 pairs of AEQ Ranger Multiplexers were used. Each one allowed between 14 and 62 two-way audio signals to be sent (depending on the quality requested) through E1 or T1- type high capacity digital circuits.

The Commentary Switching Center in the International Broadcasting Center, the nerve center where the circuits coming from the venues were received and supervised, was also supplied by AEQ. There, circuit distribution frames were installed connected to more than one hundred 48x2-circuit patch panels, AEQ DA 16 T audio distributors, AEQ IN 02 intercoms, AEQ SSR 10 line identifiers, audio quality monitors and meters and video monitors. From there, signals were controlled and re-routed between the venues, the temporary studios for each television or radio station installed at the International Broadcasting Center, and via cable or satellite to the broadcasters' permanent studios in each country. Through it, hundreds of circuits were set up and controlled.

A technological innovation was the implementation of the new Switching Center for the European Broadcasting Union EBU at the International Broadcasting Center to replace an old mechanical relay matrix that had been in service since Montreal 1976, serving the main European radio and television networks and those of other countries.

EBU chose a 400x400-circuit AEQ Impact Caddy audio matrix with digital technology. Its exclusive software application incorporates a booking management system that implemented from Salt Lake City, in real time, the necessary switching between the circuits from the venues and the international circuits destined for each broadcaster, and following the production of the multilateral television signal distributed to all of Europe through the EUROVISION network.
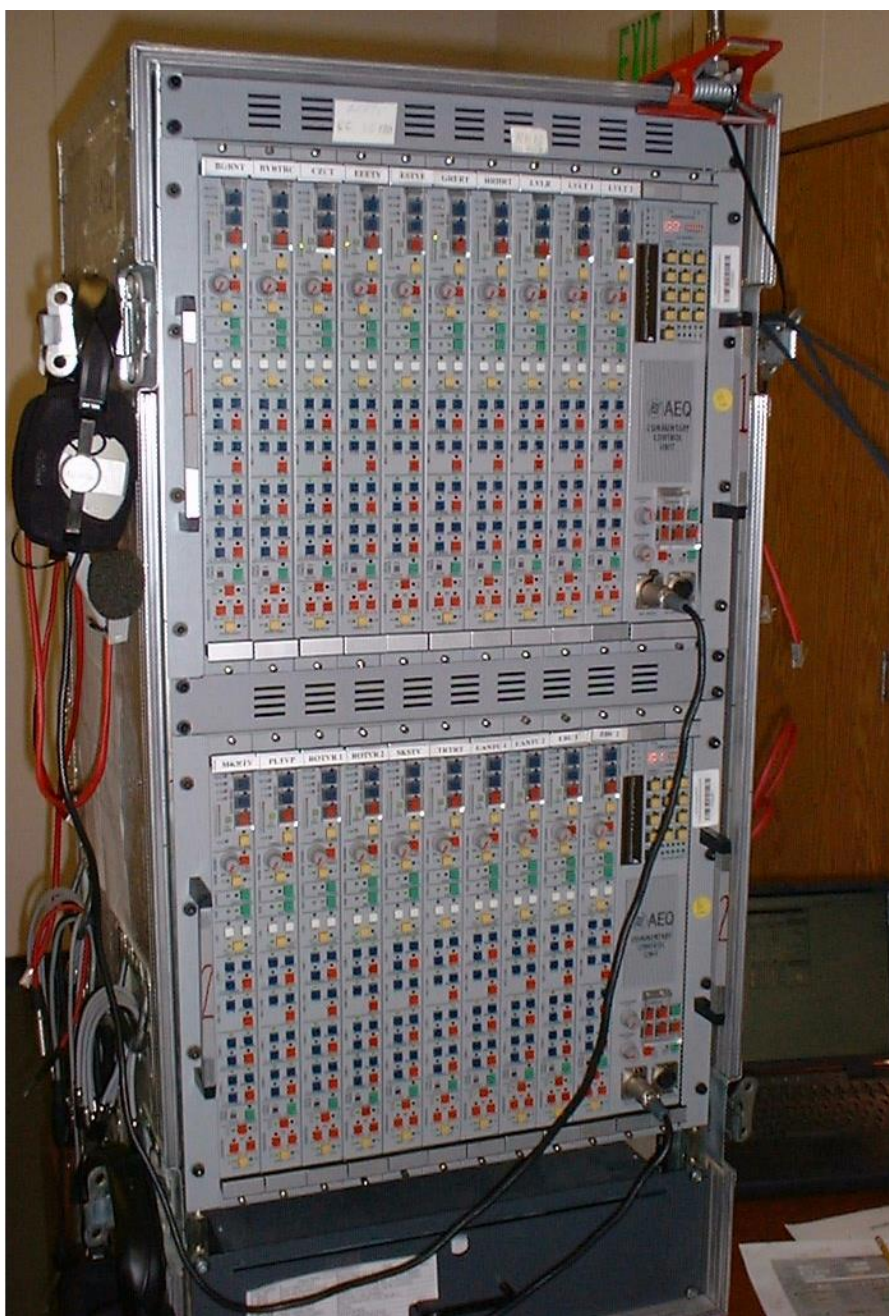
To send the audio to EBU members and associates between Salt Lake City and the program production centers in each European country, AEQ Course multiple audiocodecs were used, valid for point-to-point lines with V35 or ISDN interfaces, located next to the EBU Switching Center at the International Broadcasting Center. Their lines were paired up with those of other AEQ Course codecs, or even with those of other manufacturers, deployed at each member's or associate's stations.

This was the first time that the complete commentator audio circuitry for the main broadcasters in the world, from the origination point at the Olympic venues to each radio or television station, was done with AEQ equipment.

DIGITAL SWITCHING FACILITIES FOR EBU OPERATIONS GROUP, 2001.

Services Rendered: Design, Installation and Maintenance.

Equipment Supply: 400x400 (4Wire) Digital Summing and Distribution Switching Matrix AEQ IMPACT, including Gain Control for all Output – ports, with Auto-ranging and Auto-redundant Power supply, 90 – 250 V AC 50-60 Hz.

20 (twenty) Modules AEQ CADDY, A/D D/A Multiple Converters: 24 Mono Analogue Inputs to 12 Stereo Digital Outputs and 12 Stereo Digital Inputs to 24 Analogue Outputs.

Unlimited Member Client Software License.

1 (one) Master Control and "E@sy" Server License and the required Adaptations to the Specific need of EBU.

This Digital Audio Routing System replaces the now obsolete Router System from Ghilmetti and Sandar Electronics, and that serves EBU Operations Group for their Unilateral Transmissions from all Major Sporting events throughout the World.

The first time the system was used was during the Salt Lake Winter Olympics 2002.

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, SESSION NO. 7, MARRAKECH, MOROCCO, 2001.

Services Rendered: Operational Assistance and emplacement.

Equipment Supply: Delivery of 20 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Convention Centre in Marrakech, Morocco.

Delivery of the Software Recording and Automation System Mar4Win with Multi-Track Recording/editing Facilities for the real-time editing of the Audio signal,
Simultaneous Translation and Logging.

MEDITERRANEAN ATHLETIC GAMES, TUNIS, 2001.

Services Rendered: Operation and Maintenance.

Equipment Supply: Design and Delivery of 160 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the Mediterranean Athletic Games, Tunis, 2001.

Delivery of our equipment was accomplished through Thomson Broadcast systems and Alfacam of Belgium, our main contractors.

The Complete Equipment Delivery was accomplished to Thomson Broadcast Systems and Alfacam of Belgium as the Main Contractors.

WORLD CHAMPIONSHIP ATHLETICS, EDMONTON, 2001.

Services Rendered: Operational assistance and Maintenance.

Equipment Supply: Delivery of the EBU (European Broadcasting Union) AudioCodec Systems for the Commentary Audio Circuits. A total of 7 Complete AEQ COURSE Multi-Codec Systems were supplied, equalling to 140 4W Circuits interconnected to EBU's DATA Multiplexer for the international Contribution.

Furthermore, AEQ Delivered to the EBU members in 18 Countries, some 50 AEQ ACD-5001 Dual Channel Multiformat AudioCodecs in order to receive correctly the Generated signals in Edmonton.

FINA WORLD CHAMPIONSHIPS, FUKUOKA, JAPAN, 2001.

Services Rendered: Maintenance, and Instructions for operation.

Equipment Supply: Delivery of 60 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Different Venues in Fukuoka and its surroundings.

This was the first time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers of this Type.

The Host Broadcaster TV Asahi jointly with the official Carrier Japan Telecom chose this equipment for its optimum performance, security in transmission and flexibility of operation.

Furthermore, AEQ Delivered to the EBU members in 18 Countries, some 50 AEQ ACD-5001 Dual Channel Multiformat AudioCodecs in order to receive correctly the Generated signals in Fukuoka.

HANDBALL WORLD CHAMPIONSHIPS, FRANCE, 2001.

Services Rendered: None.

Equipment Supply: Delivery of 20 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Different Venues in France for the World Championships in Handball.

This was the Seccond time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers of this Type.

EBU SPORTS AUDIOCODEC FACILITIES, 2001.

Services Rendered: Design, Installation and Maintenance.

Equipment Supply: 33 AEQ COURSE Multi-Codec Systems, equalling to 330 Dual Line AudioCodecs or 660 4W circuits or Transmissions over ISDN Networks.

The AudioCodec System is fitted with a Universal Terminal Adapter allowing for the Connection to any Standard ISDN protocol (both ANSI and ETSI S or U interface) available in the World.

Furthermore, it is equipped with V.35 Ports allowing for data transmissions of up to 256 KBPS. Per Codec. This Equipment forms part of the long term equipment policy of EBU Operations, that allows for expansions and flexibility in operation whenever needed for a Sport Event anywhere in the World.

BBC - GENERAL ELECTION CAMPAIGN COVERAGE, 2001.

Services Rendered: None.
Equipment Supply: Delivery of 20 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Integer coverage of the British General Elections in June 2001.

This was the first time in History that BBC covered integrally a General Election through the use of ISDN Codecs/Mixers of this Type.

G-8 SUMMIT, GENOVA, ITALY, 2001.

Equipment Supply: Delivery of 30 AEQ ACD-5001, Dual Channel Multiformat ISDN AudioCodec for the International Transmissions from Genoa.

All equipment was delivered to the Main Contractor and Host Broadcaster for the Event, Ellettronica Industriale, Milano, Italy.

UEFA CHAMPIONS LEAGUE FINAL "SAN SIRO" MILANO, 2001.

Equipment Supply: Delivery of 30 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the UEFA Champions League Final "SAN SIRO" MILANO, 2001.

The International Transmissions were integrally carried out through the AEQ ACD-5001, Dual Channel Multiformat ISDN AudioCodec. All equipment was delivered to the Main Contractor and Host Broadcaster for the Event, Grupo Ellettronica Industriale, Milano, Italy.

SYDNEY SUMMER OLYMPICS 2000.

Services Rendered: Design and Maintenance.

Equipment Supply: Design and Delivery of over 900 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the Sydney Summer Olympics.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 5000 4W circuits.

For the first time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

Over 120 AEQ Ranger 2 Mb. Multiplexer Systems supplied by AEQ handled transmissions on the National side (Venues to IBC and Vice-versa). Sydney Broadcasting Organisation, the Host Broadcaster, and TELSTRA, the Official Carrier, Jointly made the selection of AEQ over its competitors.

Also this was the first time in History that such specific Audio Encoding/Decoding-Multiplexing Equipment was used for the Transmission of the Commentary Circuits, since this event been done either through ISDN AudioCodecs or through standard 4W lines provided by the PTT's assigned as carriers.

Transmissions on the International Side for the European Broadcasting Union were integrally carried out through ISDN AudioCodecs.

The ACD-5001 was also the choice made by TELESTRA, the EBU Operations Group and SOBO as the Host Broadcaster.

Furthermore, on the international Side Supplementary contracts were awarded to AEQ for the same type of equipment from Different Broadcasting Unions and were distributed throughout the

World among the EBU Members and other Broadcasters that contracted this service from EBU and other associations.

UEFA EURO-CUP, BELGIUM/THE NETHERLANDS, 2000.

Services Rendered: Design, Installation, Operation, Maintenance and de-rigging.

Equipment Supply: Design, Delivery, Installation and Operation of 180 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the 8 different Stadiums for the UEFA Euro-Cup in The Netherlands and Belgium.

The Delivery, Installation and Operation of 180 Dual Channel AudioCodecs with intercom facilities for the 8 different Stadiums for the UEFA Euro-Cup in The Netherlands and Belgium.

The Delivery of all the National side AudioCodecs for interconnection of the for the 8 different Stadiums for the UEFA Euro-Cup in The Netherlands and Belgium and the International Broadcast Centre located in Amsterdam, the Netherlands.

The design and delivery of all the interconnections and cables for Compound Area and TOC of all the 8 different Stadiums for the UEFA Euro-Cup in The Netherlands and Belgium.

All the equipment and interconnection cables relative to Stadiums, TOC and Compounds were dismantled after each Match, to be transported to the next venue or Stadium on schedule, installed and operated the next day.

IBERO-AMERICAN SUMMIT, HAVANA, CUBA, JUNE 2002.

Services Rendered: Equipment Supply.

Equipment Supply: Delivery of 5 MPAC-02 and 5 AEQ TLE-02D ISDN AudioCodecs and Commentary Mixer for the coverage of the Summit through NERA Satphone Systems (Inmarsat). The operation was accomplishe by RTVE of Spain..

This was the first time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers in combination with Inmarsat Communications Systems from NERA of Norway.

ICE HOCKEY WORLD CHAMPIONSHIPS, ST. PETERSBURG, RUSSIA, 2000.

Services Rendered: None.

Equipment Supply: Delivery of 40 MPAC-02 ISDN AudioCodecs and Commentary Mixer for the Installation at the Commentary Positions and Transmission of the Commentary Audio Circuits from the Different Venues in St. Petersburg, Russia and its surroundings.

This was the first time in History that an Event of this type was covered integrally through the Use of ISDN Codecs/Mixers of this Type.

EUROVISION SONG CONTEST, STOCKHOLM 2000.

Services Rendered: None.

Equipment Supply: Delivery of 40 ACD-5001 ISDN AudioCodecs for the Transmission of the Commentary Audio Circuits to the EBU Members that participated in the event.

NBA ALL-STARS, LOS ANGELES, 2000.

Services Rendered: None.

Equipment Supply: Delivery of 50 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the NBA All-Stars in Los Angeles, 2000.

AEQ DIGITAL COMMENTARY SYSTEM FACILITIES FOR ELETTRONICA INDUSTRIALE, MILANO, ITALY, 1999.

Services Rendered: System Installation for self-contained Commentary Facilities.

Equipment Supply: Delivery of the Digital Commentary System DCS-10 and the CAT-5 Structured Cabling.

AEQ DIGITAL COMMENTARY SYSTEM FACILITIES FOR MEDIA-SET, SWITZERLAND, 1999.

Services Rendered: System Installation for self-contained Commentary Facilities.

Equipment Supply: Delivery of the Digital Commentary System DCS-10 and the CAT-5 Structured Cabling.

AEQ DIGITAL COMMENTARY SYSTEM FACILITIES FOR RADIO AND TELEVISION SLOVENIA, LJUBLIANA, 1999.

Services Rendered: System Installation for self-contained Commentary Facilities.

Equipment Supply: Delivery of the Digital Commentary System DCS-10 and the CAT-5 Structured Cabling.

FIFA WORLD CUP SUB-18, NIGERIA 1999.

Services Rendered: Design, Installation, Operation and Maintenance.

Equipment Supply: Design and Delivery of 120 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the FIFA World Cup sub-18 in Nigeria.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 500 4W circuits. For the first time in History and for an event in Africa of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

AEQ equipment was delivered through the main contractor, Thomson Broadcast Systems.

FIS SKIING WORLD CUP, VAIL, COLORADO (EEUU) 1999.

Services Rendered: Operation and Maintenance.

Equipment Supply: Design and Delivery of 120 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the FIS alpine skiing World Cup in Vail/Beaver Creek, USA.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 500 4W circuits. For the first time in History and for a FIS event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

Transmissions on the International Side were integrally carried out through ISDN AudioCodecs. The Choice jointly by EBU Sports and BELL, the International Carrier was the ACD-5001.

On the international Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

EUROVISION SONG CONTEST, ISRAEL 1999.

Services Rendered: Design, Installation and Operation.

Equipment Supply: Design and Delivery of 60 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Venues in Tel-Aviv, Israel.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 150 4W circuits. For the first time in History and for this EBU event, the Commentary Audio was integrally generated by a Digital Commentary System.

Transmissions on the International Side were integrally carried out through ISDN AudioCodecs. The Choice jointly by Israeli Broadcasting Authorities (IBA) and EBU was the ACD-5001.

On the international Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout Europe among the EBU Members and other Broadcasters that contracted this service from EBU.

IAAF WORLD CHAMPIONSHIP ATHLETICS, SEVILLE 1999.

Services Rendered: Installation, Maintenance and Operation.

Equipment Supply: Design and Delivery of 80 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Seville Athletics Stadium.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 200 4W circuits.

For the first time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

Transmissions on the International Side were integrally carried out through ISDN AudioCodecs. The Choice jointly by Radio Televisión Española (RTVE) and EBU was the ACD-5001.

On the international Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout Europe among the EBU Members and other Broadcasters that contracted this service from EBU Operations.

SAN MARINO GP F1, IMOLA 1999.

Services Rendered: Maintenance and Operation.

Equipment Supply: Design and Delivery of 60 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the San Marino Grand Prix Formula 1 at the Imola Race Course in Italy.

This was the first time that Radio Televizione Italiana (RAI) deployed the AEQ DCS-10 Digital Commentary System for an event in Italy of this calibre and also the First Time in History that a Digital Commentary System was used for such an event.

ITALY GP F1 MONZA, 1999.

Services Rendered: Maintenance and Operation.

Equipment Supply: Design and Delivery of 60 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Italian Grand Prix Formula 1 at the Monza RaceCourse in Italy.

This was the second time that Radio Televizione Italiana deployed the AEQ DCS-10 Digital Commentary System for an event in Italy of this calibre. This was the last time that RAI required assistance from AEQ and from this moment and to date, RAI solely runs the operation and maintenance of their Commentary Facilities.

CYCLING WORLD CHAMPIONSHIP, ITALY 1999.

Services Rendered: None.

Equipment Supply: Delivery of 50 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Cycling World Championship, Italy 1999.

AEQ also delivered 20 ACD-5001 ISDN AudioCodecs for the Transmission of the Commentary Audio Circuits to the different Broadcasters that participated in the event.

COMMONWEALTH GAMES, KUALA LUMPUR '98.

Services Rendered: Design, Installation, Operation and Maintenance.

Equipment Supply: Design and Delivery of 120 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the KL Commonwealth Games.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 500 4W circuits.

For the first time in History and for this specific event, the Commentary Audio was integrally generated by a Digital Commentary System.

17TH EUROPEAN CHAMPIONSHIP IN ATHLETICS, BUDAPEST 1998.

Services Rendered: Maintenance and Operation.

Equipment Supply: Design and Delivery of 75 Commentary Positions of the AEQ DCS-10 Digital Commentary System for the Budapest Athletics Stadium.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC. The commentary Switching held the capacity of an equivalent of over 200 4W circuits.

For the first time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

On the international Side Supplementary contracts was awarded to AEQ for AudioCodecs for EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

AEQ DIGITAL COMMENTARY SYSTEM FACILITIES FOR RAI, 1998.

Services Rendered: System Installation for self-contained Commentary Facilities.

Equipment Supply: Delivery of the Digital Commentary System DCS-10 and the CAT-5 Structured Cabling.

FIFA WORLD CUP, FRANCE'98.

Services Rendered: Design and Maintenance.

Equipment Supply: Design and Delivery of over 800 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the 10 Venues at the FRANCE FIFA WORLD CUP.

Design and delivery of the Audio Distribution Equipment, Monitoring and 4W intercommunication Equipment for Commentary Switching Centre at the IBC.

The commentary Switching held the capacity of an equivalent of over 5000 4W circuits. For the first time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

On the international Side Supplementary contracts was awarded to AEQ for AudioCodecs for EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

AEQ also supplied Line Equalisation Equipment in order to adopt all the National Lines from France Telecom to nominal levels within the International Broadcast Centre (IBC) and back to Telecom Nominal Levels on the return Path.

NAGANO'98 WINTER OLYMPICS, JAPAN.

Services Rendered: Design, Installation and Maintenance.

Equipment Supply: Design and Delivery of over 750 Commentary Positions of the AEQ DCS-10 Digital Commentary System for all the Venues at the Nagano Winter Olympics.

Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

The commentary Switching held the capacity of an equivalent of over 4500 4W circuits. For the first time in History and for an event of this size, the Commentary Audio was integrally generated by a Digital Commentary System.

Transmissions on the International Side were integrally carried out through ISDN AudioCodecs. The Choice jointly by KDD as the International Carrier and Matsushita/Panasonic as main contractor was the ACD-3001.

On the international Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

AEQ also supplied Line Equalisation Equipment in order to adopt all the National Lines from NTT to nominal levels within the International Broadcast Centre (IBC) and back to Telecom Nominal Levels on the return Path.

ATLANTA OLYMPIC GAMES, USA ATLANTA'96

Services Rendered: Maintenance.

Equipment Supply: Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

Once again, and for an event of this size, the Commentary Audio transmissions on the National Side were integrally carried out through ISDN AudioCodecs.

AEQ delivered over 600 Units of the AEQ ACD-3000/3001 for the circuits belonging to the National Side.

On the International Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

PAN-AMERICAN GAMES, MAR DEL PLATA'95.

Services Rendered: Maintenance.

Equipment Supply: For the first time in History and for an event of this size in Latin America, the Commentary Audio transmissions on the National Side were integrally carried out through ISDN AudioCodecs. The Choice was close to 200 Units of the AEQ ACD-3000/3001 that won the Equipment evaluation performed by TYSSA (Telefónica y Sistemas in Argentina).

FIFA WORLD CUP, USA-94.

Services Rendered: Maintenance.

Equipment Supply: Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

For the first time in History and for an event of this size, the Commentary Audio transmissions on the National Side were integrally carried out through ISDN AudioCodecs.

The Choice was close to 700 Units of the AEQ ACD-3000/3001 that won the Equipment evaluation performed by AT&T.

On the international Side Supplementary contracts was awarded to AEQ for the same type of equipment from EBU Sports (European Broadcasting Union) and were distributed throughout the World among the EBU Members and other Broadcasters that contracted this service from EBU Sports.

WINTER OLYMPICS, LILLEHAMMER '94, NORWAY.

Services Rendered: Maintenance.

Equipment Supply: Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

OLYMPIC GAMES "BARCELONA 92".

Services Rendered: Installation and Maintenance.

Equipment Supply: Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

SEVILLE "WORLD EXPO 92".

Services Rendered: Installation and Maintenance.

Equipment Supply: 4W intercommunication Equipment and Sound Re-enforcement and Acoustics.

WINTER OLYMPICS ALBERTVILLE '92, FRANCE.

Services Rendered: Maintenance.

Equipment Supply: Design and delivery of the Commentary Switching Centre and 4W intercommunication Equipment for Commentary Switching Centre at IBC.

WORLD CUP ITALY 1990.

Services Rendered: Maintenance.

Equipment Supply: 4W intercommunication Equipment for Commentary Switching Centre at IBC.

OLYMPIC GAMES SEOUL 1988.

Services Rendered: None

Equipment Supply: 4W intercommunication Equipment for the International Broadcasting Centre.

More than 30 years of experience with audio in Sports Events

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