International Broadcasting Convention in Amsterdam

A Glimpse of the Future

By
João Martins
(Editor-in-Chief)

Photos 1–4: IBC 2013 focused on 4K pictures and the audio industry is closely following its lead with new solutions for multichannel production and distribution formats.

The International Broadcasting Convention (IBC)—September 12–17, 2013 in Amsterdam—was an exciting event, even from the audio perspective. Of course, no one can expect to visit the largest annual gathering of the worldwide broadcast industry—the National Association of Broadcasters (NAB) Show in Las Vegas, NV, may be larger, but is much less international—and not notice the digital cinema and television market is experiencing one of the most important transitions of all times.

The markets are moving to IP and IT systems-based infrastructures, and production is moving to high-quality and high-resolution levels. And, large-size sensor cameras are providing results above the standard 35-mm film emulsion production values. Vision Research, for instance, displayed its new Phantom Flex4K Digital Cinema Camera, which captures and records up to 940 frames per second at the camera's full 4096 × 2304 (4K) resolution.

Also, thanks to developments in advanced compression technology, including High Efficiency Video Coding (HEVC), the entire industry is moving toward Ultra High Definition Television (UHDTV) in 4K (see **Photos 1–4**).

Obviously, audio has to keep pace with the huge increase in digital production, especially with the rising number of people purchasing affordable digital cameras. During IBC 2013, it became clear that all the relevant broadcast associations and consortiums want 4K to be the new production standard. The broadcasting industry is aiming even higher to 8K and is supported by Japanese television NHK's initiatives. Also, 8K, like 4K, already have International Telecommunication Union (ITU) standards and the Ultra-High Definition (UHD) formats are complemented with 22.2 multichannel audio and spacialization.

At IBC 2013, everyone was discussing 4K's initial arrival to consumers, not through the traditional broadcast networks and television distribution operators, but through cloud services and Internet streaming (e.g., the already-confirmed services from Sony and Netflix).

Akamai Technologies (www.akamai.com), the leading cloud platform for video distribution, announced at IBC 2013 that it is deploying FastTCP technology across its Akamai Intelligent Platform. The technology increases download speeds for music, games, and videos and enhances the quality of streaming video content, such as multi-Megabyte music files and apps, and multi-Gigabyte Ultra-HD/4K video content.

Beamr Video (www.beamrvideo.com), a next-generation, patented video optimization technology company from Israel, demonstrated how optimization technology automatically reduces the bitrate of any H.264 (MPEG-4 AVC) video stream by up to 50% without affecting perceptual quality or altering the format of the original stream.

"4K resolutions represent the next step in high-definition video, but until now providing content in this new format has posed daunting technical challenges. Beamr Video has figured out how to reduce the massive footprint of video files, so they can be distributed efficiently and cost effectively," said Sharon Carmel, Beamr Video's founder and CEO. "Beamr Video is solving the bandwidth bottleneck now, offering the same reduction ratios for H.264 streams today as those promised by HEVC. More importantly, we can do so without forcing users to download any additional software or programs."

Also, Broadcom (www.broadcom.com), a semiconductor solutions provider for wired and wireless communications, announced new industry-leading chipsets that enable operators and OEMs to rapidly introduce UltraHD subscriber hardware and content with support for the advanced high-efficiency video codec (HEVC) standard H.265 at up to 60 frames per second. The chipsets will enable existing high-speed data networks to better utilize the higher throughput required by UltraHD content.

French company Allegro DVT (www.allegrodvt.com) announced at IBC that it already licensed its HEVC compliance streams to 25 major integrated circuit (IC) vendors in China, Europe, Japan, Korea, Taiwan, and the US, supporting the Main10 profile, specifically designed to improve 4K content video quality with 10-bit color depth.

Technologically speaking, the 2013 IBC also focused on software and wireless technology. That is not to say that hardware is less important or that we could not see actual innovation in physical systems that take space on the racks, but the reality is we are hearing more about efficiency, cost-effectiveness, and scalability. When you hear those things, we know they are associated with software solutions—even when those solutions depend on great hardware to run.

Talking about hardware, it's actually funny to realize that the biggest announcements on media and television in particular, have to do with silicon-level applications and/or open hardware and open-source software vs. the dominance of Apple's solutions, still felt across the whole media industry.

And when we talked about Apple (www.apple.com) at IBC 2013, it was possible to literally see a TV station on a Mac Mini, by Austrian company ToolsOnAir (www.toolsonair.com), which is successful worldwide, and TV solutions by US-based Primestream (www.primestream.com), and even second screen solutions from ExMachina PlayToTV (visit www.2ndscreensociety.com/events/amsterdam2013/) running on iPhone and iPad.

There were not more Mac-based solutions in Amsterdam because everyone's waiting for Apple's new Mac Pro. There is no other industry like broadcast, where the announcement of the new workstation-level Mac Pro caused so much anxiety, espe-

Photo 5: Minnetonka Audio offers multichannel solutions for Dolby and DTS formats.

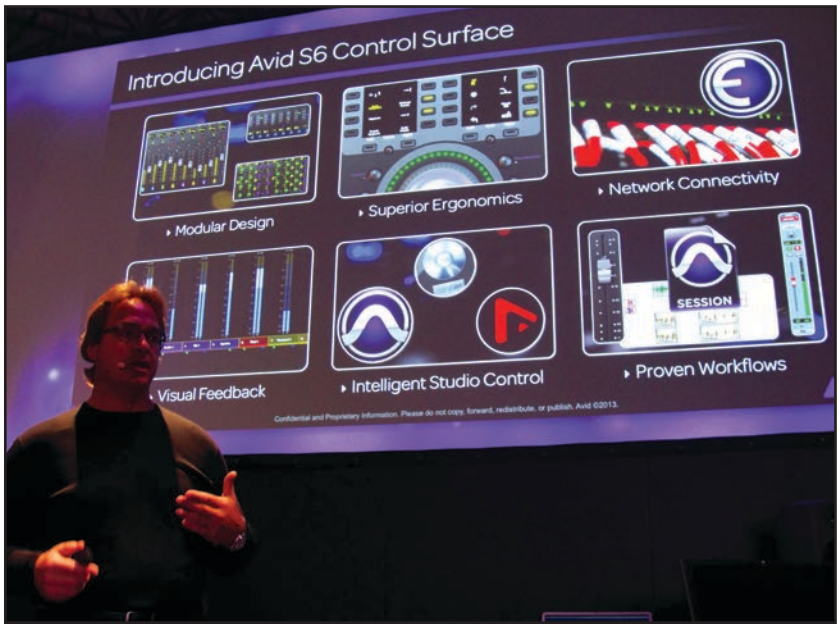

Photo 6: Avid Technology launched its new Avid S6 modular control surface at the IBC 2013 in Amsterdam.

cially after the new machine's specifications were released, leaving post-production, visual FX, 3-D animators, and creative video professionals (not to mention audio engineers, obviously) drooling in anticipation. If Apple keeps to the promised schedule and releases the new Mac Pros in December, we can expect a serious upturn in the market until the next NAB Show in April 2014.

The Future of Broadcasting

As the European Digital Video Broadcasting (DVB) Consortium has warned for several years now, the telecommunications industries are trying to reinvent the wheel when trying to build new on-demand content distribution business models on top of their 4G/LTE cellular networks. Severely restricted by the spectrum, channel count, data bandwidth, architecture topology, and even by the inherent modulation schemes, the television industry itself has already debated those limitations for years while going through the digital transition. That is why the Future of Broadcast Television (FoBTV) initiative is gathering momentum, uniting the previously irreconcilable interests of the different digital television consortiums from the US, Europe, Japan, China and the rest of the world, previously divided by different politically motivated television standards.

Photo 7: Avid redefines mixing with the all-new S6 control surface that leverages the best of the industry-leading ICON and System 5 product families in a new modular design.

As the DVB consortium has demonstrated, there are current digital television technologies that bring the exact efficiencies needed to sustain a new content distribution model using the airwaves. Increasingly regarded as the technology platform, it will enable a new IP-compatible global broadcast standard, which could finally solve the inefficiencies found on the cellular data distribution models pursued by the telecom market.

In fact, the IBC has been a key platform for idea exchanges in this area. It is also where, for the first time there were serious ongoing discussions about hybrid network models (e.g., broadcast and cellular) as key components of the new FoBTV global standard.

At this year's IBC, the DVB consortium celebrated its 20th anniversary and promoted another significant world's first technology demonstration with a live DVB-T2 terrestrial broadcast transmission delivering a wide range of resolutions from 4K Ultra HD down to the screen resolutions typically found in mobile devices, underlining the power and flexibility of this second-generation standard.

The demonstration used DVB-T2 transmission of a 4K television service with HEVC encoding, and mobile service, all delivered in a single 8-MHz channel, using the Multiple Physical Layer Pipes (PLPs) that enable separate adjustment of the robustness of each delivered service within a channel to meet the required reception conditions. The PLP for this mobile service is compliant to the T2-Lite parameter set as defined by the DVB organization. The demonstration also included support for IPTV, with a TV display receiving a standard broadcast signal and IPTV via its Ethernet interface with support for IP multicast, without the need for traditional set-top boxes.

The official IBC program also featured several DVB-related sessions delivered by DVB experts and its membership. The sessions included "New Concepts & Competition for Terrestrial Broadcast," chaired by Phil Laven, DVB's chairman. Laven highlighted the fact that following the North-American Advanced Television Systems Committee (ATSC) call for proposals for Next-Generation TV Broadcasting Technologies (ATSC 3.0) in March 2013, 10 Initial Physical-Layer Proposals were submitted, most of which are based on the DVB-T2 second-generation terrestrial standard.

"As technology continues to advance, the ATSC and its members are always looking to the horizon. Internet technology now permeates the consumer experience and mobility has become a requirement. With the next generation of television standards, we want to take advantage of advances in compression, transmission and other technologies that will keep millions of people informed and entertained through broadcasting's inherently efficient one-to-many architecture," stated ATSC President, Mark Richer, highlighting the initial work on ATSC 3.0.

In IBC 2013's Future Zone area, the Technische Universität Braunschweig (Brunswick, Germany) offered one of the most sensible distribution plans for putting live mass-appeal programming on mobile devices. The presenters provided an overlay of a tower-based broadcast over regular LTE cells. Those same efficiencies and the desire to converge existing services to the consumer in a more sustainable model are exactly the reason why the European Broadcast Union (EBU) reintroduced a similar discussion regarding digital radio at the IBC 2013.

Yes, radio is back in full force in the broadcast association's agenda, particularly when "the elephant in the room" are the popularity of music streaming services like Pandora, Spotify, and the launching of Apple's own streaming service, aptly named iTunes Radio.

Even with Apple's service iTunes Radio limited mostly to the US, the reviews are highly positive and the advertisers are already supporting it, helping to introduce traditional radio listeners to the Internet radio idea.

Many Audio Innovations

In this environment of accelerated image innovation, audio vendors were showing important new solutions that directly addressed the main needs of production companies and broadcasters while retaining the larger focus on loudness measurement requirements and multichannel production.

Minnetonka Audio (www.minnetonkaaudio.com) announced its Dolby-certified pro coder, SurCode for Dolby Digital Plus Encoder, which is tightly integrated into the Adobe Media Encoder CC and available in Adobe Creative Cloud. The integration enables 5.1 Dolby Digital and 5.1 Dolby Digital Plus streams to be encoded directly within a user's surround mixing environment, multiplexed, and added to a DVD or BD authoring project (see **Photo 5**).

At IBC 2013, Minnetonka Audio also displayed the latest version of its flagship product, AudioTools Server (ATS) 3.0, which has an improved workflow processing, support for additional codecs and container formats, augmented load balancing, and failover for multisystem environments. ATS 3 is an enterprise software system for file-based workflows, designed to automate even the most sophisticated audio tasks (e.g., managing and processing Dolby E, Dolby Digital, Dolby Digital Plus, and linear PCM content as well as the audio essence within transport streams, MXF, and QuickTime containers).

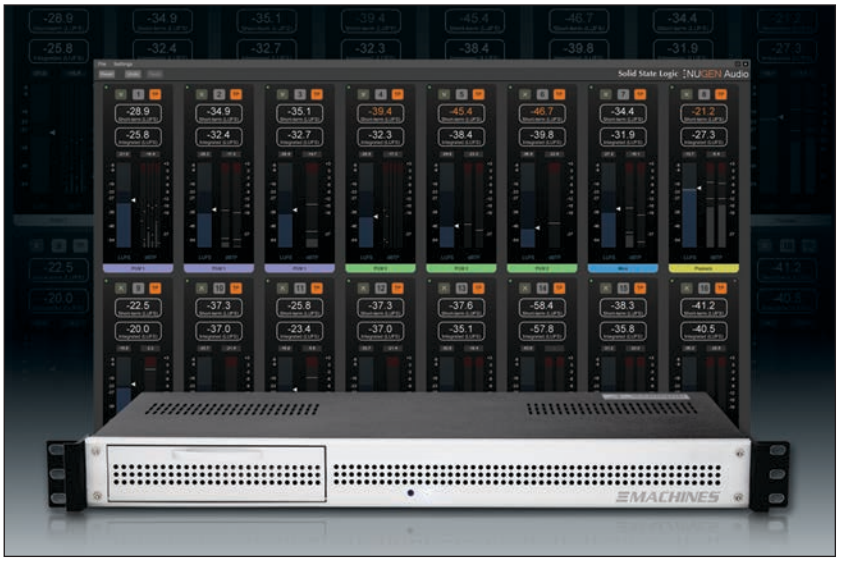

Photo 8: Solid State Logic introduced the LMS-16, a new multichannel Loudness and True Peak metering system developed in cooperation with Nugen Audio. The Nugen MultiMonitor was also presented as a stand-alone software product.

During IBC 2013, Avid Technology (www.avid.com) issued a major audio announcement, unveiling its S6 modular control surface for recording, mixing, and editing. The S6 featured unprecedented modularity, ergonomics, and speed (see **Photo 6** and **Photo 7**). Avid S6 is designed for audio professionals working in the most demanding production environments. It provides audio professionals with a state-of-the-art solution that easily scales to meet their current and future challenges. Built on the same proven technology that is core to the industry-leading ICON and System 5 product families, the Avid S6 enables mixers to quickly turn around complex projects while swiftly handling last-minute changes. With its unparalleled ability to simultaneously control multiple Pro Tools and other EUCON-enabled DAWs over simple Ethernet, S6 also enables network collaboration on a single integrated platform.

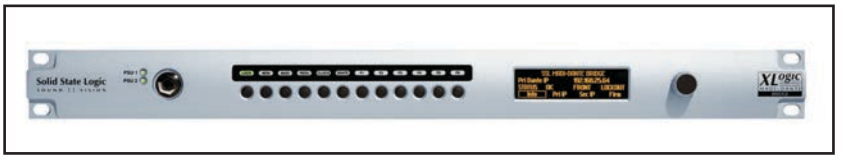

Photo 9: Solid State Logic's new MADI Dante Bridge enables SSL C100 HDS and C10 HD digital broadcast consoles or any other standard MADI device to connect to Dante networks with full redundancy maintained.

Photo 10: Lawo, an international provider of digital mixing consoles, routing systems, video solutions and turnkey systems for the professional broadcast industry, showcased its products at its booth at the IBC 2013.

The S6 control surface can be customized with the addition of modules and multipoint touchscreens, with top-lit status knobs, and high resolution LEDs. Pre-configured, S6 M10 or S6 M40 surfaces may be purchased with the required faders, knobs, and so forth already provided or, with S6 M40, further personalized with different channel control combinations. Additional 12.1" displays on the S6 M40 systems further enhance instant project overview by providing deep visual feedback on key items (e.g., channel names, audio meters, routing, clip names, and scrolling waveforms). Ultimate recall enables quick location for last-minute mix changes.

During its press conference, Avid Technology also announced that more than 7,500 Pro Tools|HDX systems are already in use worldwide—including its Pro Tools|HD 11 software with its core engine, 64-bit architecture.

Photo 11: Lawo demonstrated its new LCU Commentary Unit with Audio-over-IP (AoIP) technology.

Illustrating the evolution to audio network solutions—including Audio Video Bridging (AVB) of which Avid is one of the main proponents—British manufacturer Calrec Audio (www.calrec.com), made two interesting announcements in audio mixing solutions for broadcast on-air and live production. The company confirmed its AVB implementation of an interface card for its Hydra2 modular I/O rack. This interface enables signals to be sent over standard networks to other AVB-compliant equipment, such as Riedel Communication's intercom systems. Because communication between equipment is made over a local area network (LAN), many of which already exist in building infrastructures, users can easily achieve greater interoperability. This implementation follows AVB Layer 2 protocol on 100-Microbit or Gigabit Ethernet, supporting real-time streaming services. This capability means that bandwidth can be reserved through network paths to lock down switching resources and ensure streaming-friendly packet-queing and forwarding behavior.

The second Calrec announcement was a patented assistive mixing iPad app, designed to simplify the job of tracking the on-field audio during a soccer game, allowing those with less experience to create a quality mix very simply.

Solid State Logic (SSL, www.solid-state-logic.com) announced a new multichannel loudness and True Peak monitoring system, the new LMS-16 (see **Photo 8**). The LMS-16 is a 16x5.1 channel system with comprehensive compliant metering, developed in a strategic partnership with NuGen Audio (www.nugenaudio.com). SSL will offer Nugen Audio's new MultiMonitor software as part of a turnkey system that provides the software pre-installed and configured on an industrial strength 1RU PC. It is fitted with SSL's MadiXtreme 128 audio interface. An optional monitor arm will also be available to facilitate convenient side mounting of a screen on C100 HDS or C10 HD consoles.

NuGen Audio also launched its MultiMonitor as a standalone software product. The next evolutionary step for its highly regarded VisLM software, MultiMonitor provides the most powerful multichannel Loudness and True Peak metering available today. It offers 16 individual meters, each capable of mono, stereo, or 5.1 formats (simultaneously providing metering of up to 96 audio channels) with each meter showing a LUFS momentary display alongside a True Peak display. Each meter also has a dedicated numeric short-term and integrated LUFS

data display. The meters can be color-coded to aid grouping. Each meter also features a minimum and maximum short-term alerts function. MultiMonitor is fully compliant with CALM Act legislation, ITU-R BS1770/1, ATSC A/85, EBU R128 and other specific worldwide localizations.

In a separate announcement, SSL also joined the Dante bandwagon, introducing the MADI Dante Bridge. The MADI Dante Bridge is a broadcast-specification bridge between the industry standard MADI audio format and Audinate's Dante IP Audio Network (see **Photo 9**). The release of SSL's first Dante I/O product added the substantial weight of the SSL brand to the adoption of Dante and AVB standards as the industry choice for IP audio networks.

Audio on Networks

The British company JoeCo (www.joeco.co.uk) introduced its new BlackBox BBR1MP 24, a 24-channel, 1U recorder housing 24 high-quality microphone preamplifiers operating at up to 24-bit/96k with optional Dante interface and optional 2U breakout box, which is fully controllable via iPad using the JoeCoRemote app.

Riedel Communications (www.riedel.net), the German pioneer in real-time video, audio, data, and communications networks, announced its new CPX-AVB expansion card for the Riedel Artist 1100 intercom series control panels. The CPX-AVB is a dedicated card that fits in the expansion slot of the Artist 1100 series OLED control panels. The card turns the control panel into an AVB-enabled device, making the panel's ports available within the entire AVB network. The expansion card converts two Artist ports to the AVB network and vice versa.

Riedel is already offering a comprehensive suite of AVB-enabled interfaces for its Artist intercom platform and Riedel's new Connect AVB A8 provides eight analog inputs and outputs on RJ45 connectors, with full AVB network management and system-wide control of all AVB components via software.

At IBC 2013, HARMAN disclosed plans for the MN-ST-AL-2, a new MediorNet expansion card for Studer consoles. Riedel's MediorNet is a fiber-based real-time signal transport solution for video, audio, communications, and data and the MN-ST-AL-2 card provides two ports, each with redundant interfaces, for connecting Studer mixing consoles via the Studer A-Link protocol to Riedel MediorNet Modular frames. The consoles become an integrated part of the entire signal distribution infrastructure. Users can gain up to 384 channels per connection and realize significant cost-savings in cabling and maintenance while continuing to utilize unparalleled flexibility and signal quality.

Photo 12: Genelec presented two new three-way Smart Active Monitors to the SAM Series: the 1237A and the 1238A.

Photo 13: DPA Microphones launched the d:dicate Recording Microphone range with the new MMC4018 modular supercardioid condenser capsule.

Photo 14: Sennheiser unveiled its Esfera surround microphone system, which provides 5.1 surround sound from just two channels.

The new MediorNet MN-ST-AL-2 card supports compact or larger decentralized digital audio router applications with any network topology. It only requires a card slot with two high-speed ports. The new Riedel card for MediorNet supports all Studer Vista 5 and Vista 9 consoles, as well as Studer OnAir 3000 radio consoles.

On another networking front, several companies showed their support for the Ravenna real-time distribution of audio over IP network technology, proposed by a consortium of European audio companies.

A main proponent of the Ravenna technology, German company Lawo (www.lawo.de) introduced a new Ravenna-based commentary solution for standard IP networks (see **Photo 10**). Lawo's cost-efficient and flexible Commentary Unit (LCU) was developed in close cooperation with Host Broadcast Services (HBS, www.hbs.tv), a Swiss company specializing in producing multilateral video and audio feeds for TV and radio from world-class international sports events. The fully digital system is based on the real-time Audio-over-IP (AoIP) networking technology that enables the use of standard IP networks for interconnecting venues and devices, resulting in significant savings in cabling while increasing the system's flexibility (see **Photo 11**).

Photo 15: SoundField developed its new DSF-B Digital Broadcast Microphone Package with DSF-2 surround microphone, DSF-2 controller, and DSF-3 processor to provide the surround and stereo sound at large scale outside broadcast events.

The LCU is designed to be easy-to-use for commentators, enabling them to focus on their tasks rather than managing the technology. It provides an intuitive user interface for up to three commentators per LCU. Lawo-quality microphone preamplifiers and uncompressed real-time AoIP (24 bit/48 kHz) ensure uncompromised audio quality. The LCU is complemented by the Lawo Commentary Control Software, which replaces the commentary control units usually associated with two-part commentary systems.

The software provides an integrated user interface to operate a complete commentary installation. The software is optimized for touch-screen operation, offering easy and efficient support for up to 20 commentators per screen. The software also enables a support engineer to listen to any LCU signal, and its remote control facilities mean that most help requests can be resolved with a mouse-click.

Microphones and Monitors

The Finish company Genelec (www.genelec.com) debuted its latest additions to its ground-breaking Smart Active Monitor (SAM) range. The new Genelec 1237A and 1238A monitors set a new benchmark in terms of monitor performance for mid-sized control rooms in broadcasting, post and music production (see **Photo 12**). Both three-way SAM monitors are designed to adapt to their environment by tuning the frequency response to compensate for acoustical room influences and to achieve perfect alignment of volume levels at the listening position. Both monitors can be either free-standing or flush-mounted. The flush versions benefit from a powerful new RAM-L amplifier that can also be attached to the loudspeaker cabinet when the monitor is free standing.

DPA Microphones (www.dpamicrophones.com) presented the new DPA MMC4018, a modular super-cardioid condenser capsule that is an integral part of the Danish company's d:dicate Recording Microphone range (see **Photo 13**). Thanks to its directional pattern, the MMC4018 has an extremely controlled off-axis response and uniform directional shape (independent of frequency), thus ensuring

exceptionally smooth and controlled sound. Unlike the DPA d:dicate 4017 Shotgun, which includes an interference tube and is more directional at the sides, this new variant offers more consistent rear rejection, making it an interesting alternative to a conventional shotgun. While the MMC4017 is exceedingly directional, especially at higher frequencies, the sleek and compact MMC4018 focuses on low noise and high sensitivity, making it more suited to long-distance voice capture.

The DPA MMC4018 is the counterpart to the MMC4018V capsule, which is used in DPA's popular d:facto Vocal Microphone, offering extremely good isolation and feedback rejection, making it ideally suited to applications where clarity and audio quality are critical.

In one of the most interesting announcements in audio surround productions, Sennheiser (www.sennheiser.com) unveiled the Esfera surround microphone system, providing 5.1 sound from just two channels (see **Photo 14**). The system consists of a SPM 8000 high-quality stereo microphone—designed with Sennheiser's renowned RF condenser technology—and a 19" rack-mount processing unit that converts the stereo signal into a complete 5.1 signal anywhere in the production workflow, whether in real time or during post production. The microphone unit's compact size and the processing unit's versatile connectivity ensure Esfera can easily be integrated into existing workflows.

Of course, the Esfera microphone unit can also be used without the Esfera processor wherever a high-quality stereo microphone is required.

TSL Products (www.tslproducts.com)—the British company who acquired SoundField, the surround sound microphones and processing specialist, in 2012—promoted its new SoundField DSF-B Digital Broadcast Microphone Package, which directly targets the needs of broadcasters and mobile production specialists. The SoundField DSF-B Digital Broadcast Microphone Package consists of a DSF-2 surround microphone, a DSF-2 controller, and a DSF-3 processor, enabling multichannel audio from a single point source (see **Photo 15**).

The DSF-2 system has been specifically developed to simultaneously provide the surround and stereo soundscape at large scale outside broadcast events (e.g., football stadiums and concert hall venues). Its advantage over alternative methods is that the multichannel audio it generates from a "single-point" source is completely phase coherent. This enables the broadcaster to collapse the surround to stereo or mono for TV and radio feeds without loss of information, frequency imbalance, or any of the other phase problems associated with spaced microphones or multi capsule "dummy head" arrangements.

Photo 16: RTW debuted its LQL (Loudness Quality Logger) option for TM7, TMR7 and TM9 TouchMonitor systems.

The DSF-3 is a 19" rack hardware processor with an all-digital signal path, for decoding a SoundField microphone or B-format signals to digital 5.1 surround or stereo audio (or both simultaneously) at any sample rate. Five-segment LED displays on the front panel's left side act as input level meters.

The DSF-2's microphone parameters can be remotely controlled, including orientation, angle, pickup pattern, and rotation. This is critical for sound engineers covering a large-scale broadcast event as these changes can be made in the studio

Photo 17: RTW's TM3 TouchMonitor now offers a moving coil emulation display.

Photo 18: DK-Technologies showcased its DK T7 Multi Touch Audio Meter, which combines audio and loudness meter functions.

or OB truck without physically resetting the microphone position.

In terms of monitoring sound reproduction, German company RTW (www.rtw.com), a leading vendor of visual audio meters and monitoring devices for professional broadcast, production, post production, and quality control, debuted its Loudness Quality Logger (LQL). The LQL is a new tool for logging, true-peak data analysis, and reporting that is compatible with the TM7, TMR7, and TM9 TouchMonitor product line. The LQL license (SW20014) is a natural extension of RTW's range of software options for the 7" and 9" line of TouchMonitor audio meters (see **Photo 16**).

Photo 19: Schoeps introduced its new V4 U studio vocal microphone.

LQL enables data to be derived directly via an IP-connection from a capable TouchMonitor audio meter, as well as from external storage media (e.g., a USB memory). The software also includes dual limit weighting, status information, marker, and various other reporting features. The new PC software is free to users, however the SW20014 LQL license is required to enable a TM7, a TMR7 or a TM9 series meter to be compatible with data export and additional display functions. RTW's TM3 TouchMonitor now offers a moving coil emulation display (see **Photo 17**).

The Danish company DK-Technologies (www.dk-technologies.com) unveiled its feature-rich DK T7 Audio Meter, a compact 7" Multi Touch unit, incorporating as standard every audio and loudness meter function currently offered by the award-winning DK Meter range (see **Photo 18**). These functions include bar graphs, moving coil emulations, DK-technologies' proprietary StarFish and JellyFish display technology, fast Fourier transform (FFT) spectrum analysis and, of course, industry compliant loudness and logging.

The new DK T7 includes 3G SDI Picture Preview, as well as the ability to read and log against SMPTE time-code – a feature that has only recently been added to the DK Meter range. The new meter also allows end-users to adapt to virtually any format including 3G SDI I/O. The unit offers 8 AES/EBU input/output channels, two-channel analog input channels, a headphone output, and an HDMI monitor output.

Finally, German manufacturer Schoeps (www.schoeps.de) used the IBC 2013 to introduce its new studio vocal microphone, the V4 U. The "classic look" of the V4 U is based on the Schoeps CM 51/3 model from 1951, which marked the birth of modular microphones (see **Photo 19**).

The new Schoeps V4 U is a thoroughly modern studio microphone with a new small-diaphragm capsule architecture. The microphone has a bevelled collar to control the polar response, new circuitry offering maximum sound pressure levels (144 dB SPL, corresponding to an output level of 4.8 V), and a new mechanical construction. The V4's capsule head has an adjustable tilt angle, and the capsule is elastically suspended internally to reduce handling noise. The on-axis frequency response of the V4 U features a mild high-frequency lift with a cardioid polar pattern and a sensitivity of 16 mV/Pa.

Available in blue or gray finishing, the Schoeps V4 SGV Set contains the microphone, a wooden case, and the SGV stand clamp. The "V4 USM Set" contains the microphone, a wooden case and the USM-V4 elastic suspension.

Overall, the IBC was a well-attended, interesting show with a myriad of new products. For more information, visit www.ibc.org.