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Crestron takes control:
The Helsingborg Arena

The city of Helsingborg in Sweden received an early Christmas present from the Henry Dunker foundation. The new Helsingborg Arena is a multipurpose sports and entertainment venue fitted out with some of the newest audio and video technologies and an integrated master control system to keep everything in sync.

A multipurpose masterpiece



Henry Dunker was a Danish entrepreneur and businessman who based himself in the Swedish city of Helsingborg. Upon his death he bequeathed much of his wealth to the Henry and Gerda Dunker Foundation, which since 1962 has funded cultural projects in the city in which he built his fortune.

The latest project to benefit from the patronage of the foundation is the Helsingborg Arena. A 400m Swedish Kronor (€40m) multipurpose venue which opened on November 30th 2012. Designed to cater for sports - mainly handball and land hockey - as well as live entertainment and conference use, the arena has been equipped flexibly and powerfully by a team

of integrators and distributors headed up by Fremlab AB under Carl-Fredrik Malmgren.

He partnered with AV distributor Specialelektronik and Bose Sweden to install a system which delivers building-wide control, media distribution and sound reinforcement across three sports halls, and numerous foyer and restaurant areas.

“Can you make a good sound system for conferences, and sports, and concerts? No, I don’t believe so without compromises.”

- Carl-Fredrik Malmgren, Fremlab AB

Programming the combined media control and distribution system, as well as the conjoined lighting and low voltage systems was independent programmer Niklas Olsson, who built the first system in Europe to use Crestron to concurrently control both lighting and media in a sporting arena.

Carl-Fredrik Malmgren set the scene, when Chris Fitzsimmons went to visit the site on a snowy December day in 2012, just 24 hours before the first sporting event to be held at the venue.

“In general, they’ve put a lot of effort into making it a very versatile, flexible building. There are large inload and outload areas, big doors, a massive ceiling space with a working floor and plenty of cabling and power outlets. On top of that the facilities we were responsible have plenty of headroom and capabilities for all kinds of events.

“The media system is valued at around 12m Swedish Kronor, which has given us the opportunity to create really a well specified solution, but particularly with regard to the sound system we’ve focused on making the key elements do one thing really well.

“We’ve had discussions at other venues about whether you can do more than one thing with a sound system. Can you make a good sound system for conferences, and sports, and concerts? No, I don’t believe so without compromises. You end up with something that’s not perfect for anything. In this case we focused on the sports application to deliver an excellent mono system with good floor and stand coverage. We have then included plenty of options for other sound to be brought in to cater for other kinds of events.”

Tech-Spec

Audio

Bose RoomMatch, DS16f, 802, MB12 loudspeakers, PowerMatch amplifiers, ESP-88 processing.

ClearOne ConvergeSR 1212

Sennheiser Evolution 300 series wireless

Yamaha 01V96L digital mixing desk



The arena by night lit by LEDs and controlled by Crestron dimming equipment.

The main hall sound system is built from Bose RoomMatch cabinets, in 10 clusters, driven by PowerMatch amplifiers. Audio and control signals are distributed to the remote racks from the central media room via CobraNet from a Bose ESP-88 DSP units.

“I was really impressed with the RoomMatch when it was first announced because of its flexibility, and also by the PowerMatch amps – their power density is really nice,” remarked Malmgrem.

Halls B and C also feature Bose sound systems, this time using 802 cabinets driven by more PowerMatch amplifiers, whilst all the public dwell areas benefit from Bose DS40 ceiling speakers.

Inputs to the ESP-88 unit include a variety of wireless microphone channels, local XLR inputs in all three halls, and music playback devices such as iPods. A mobile sound desk, which includes a Yamaha digital mixer is available for use in any of the halls or

conference rooms.

Bose Sweden assisted Fremlab in both modelling venue in the first place, and then in tuning the sound system once it had been installed.

There were also initial discussions around whether to combine the PAVA and main sound systems, but in the end it was decided against this idea and a completely separate Ateis powered system handles emergency announcements and paging in conjunction with Bosch loudspeakers.

In the main arena there is also an extensive video display solution. This consists of a centrally hung LED display cube, and a perimeter board system all supplied as a turn key solution by Sqvadrat.

Malmgrem commented: “I think this is the best way to work in such big projects. You can only have some many competences in one house. Their team came in and delivered the installation in 14 days, and

connected it to our media system.”

The media system in question is based on Crestron Digital Media and comprises content distribution to a 49 screen six-channel digital signage network, as well as two connected conference spaces and a live video and broadcast setup.

Petter Jarbo from Fremlab was responsible for the last part of this, and described the live video solution:

“The broad structure is that we have a Blackmagic ATEM switcher in the middle. That has an output down to the DM matrix. We get a feed from the matrix, a feed from four cameras, and also a feed back from our reply system. The base resolution is 720p, which is a small limitation of the ATEM – you have to pick a resolution to work at because it’s not a scaler. 720p caters absolutely fine for the broadcast guys so we are happy with that.”

Added Malmgrem: “Part of the whole design >



< process was to speak with the various parties that might use the arena and understand their needs. That's why we have extra fibre ports for more cameras, the HD-SDI connection for OB vans and the additional ceiling services for events groups. Also, if the resolution had been 1080p we would have needed a bigger building to hold the relevant LED screens!"

The AV structure itself is anchored on a Crestron DM-MD32x32 matrix. Sources include the live video system, PTZ cameras, the DISE digital signage server and various patch panels located around the main hall and conference spaces.

The matrix then provides outputs to the digital signage network, extended over Cat5 and in some cases HDBaseT via Atlona distribution amplifiers. All of the screens on the network are Mitsubishi's 46" LDT462V displays. It also drives the LED display controllers delivering native resolution content for the 8 screens which make up th perimeter and the four faces of the suspended cube. There is also an output to the HD-SDI feed for broadcast use.

Away from the main system are two stand alone conference spaces using Creston control for media switching and Mitsubishi projectors as displays. There are two further large "spare foyers" which are connected, these include Bose MA12 columns and MB12 subs for sound reinforcement as well as more Mitsubishi projection.

Responsible for programming the Crestron management of both the AV system and the lighting control was independent programmer Niklas Olsson:

"I was working both for Fremlab and the electrical contractor so I had two deadlines. The first was for the lighting control and the sun-screens and ventilation and related equipment.

"What they wanted was a huge load of functions, based around a number of different scenes. The system consists of 19 lighting racks with Crestron dimmers and DALI controllers, and there are six processors controlling between two and four racks each. These all speak to a main MC3 processor, which has some master functions onboard such as the astronomical clock, and other things that are happening in multiple locations. This MC3 also hosts the GUI for the whole AV and lighting

combined system.

"It can be controlled via the web thanks to X-Panel, or via a windows .exe file, and from four 12" V-Panels. There is one of those built into the main AV rack, and then three mobile ones which can be plugged into either the administrative network or the AV network anywhere on the site.

"I come from the events profession and one of the things I know is that you can't have any uncontrolled things going on. So for example is someone opens a door into the arena you don't want light flooding in from the corridor. Therefore if you can see a light from the arena, you can control it via my system.



The main audio and video media racks including Crestron DM matrix, TV One scaling and Bose DSP and amplification.

Every bar or seating area has its own lighting and all of that can be controlled from a hall scene.

"The user interface is the same for the AV and lighting systems, but they are run by different processors. Regarding the AV equipment there was a lot of thought put into the video management side of things because we have 50 screens around the house to manage. We wanted to make sure they knew what was showing on what screen, when there were errors, or if a screen lost Ethernet connection.

"During programming we realised that the Mitsubishi screens contained Crestron Connected technology, which was really nice because then the screens are connecting to me, not to the other way

around. That means I don't have to set up polling for changes, each screen reports to me by default, and as soon as anything changes on the screen it is reflected in my programming. You can do that normally with tools like TCP clients etc, but this is much easier! It's been working extremely well from day one.

"On the network we have two of the four meeting rooms, the reserve foyers are connected to the main control system, but not to the DM. So, we can see status and devices but not send content. Also that means we can control them as part of our pre-alarm shutdown.

"At 11 o'clock at night or whenever required, everything powers down. We get info from the alarm system when it's armed. There's a ten minute shutdown period. Also in the morning the system starts to be boot up in preparation for the building to open.

"We also have connectivity with the HVAC system allowing us to enact various scenarios based on the number of people in the hall and the configuration. We have that for all three halls.

"There is connection to the fire alarm. All screens will show the emergency message when it's triggered, including the LED display system. It mutes the Bose sound system too.

"The interface is designed to be simple and to limit the number of options presented at any one time. The first thing a user does is choose the location to be controlled – Hall A, or Hall B etc, after that he is presented with relevant choices of lighting and audio controls.

"The digital signage control interface, is managed very visually. Each screen shows up as an icon on a map, and tapping that icon will give you the channel of the digital signage player its receiving and the status of the screen."

Charlie Falt, the operations manager at the Helsingborg Arena has acted as the client throughout the process and is now responsible for the running of the building. His reaction so far has been very positive.

"After four uses now, the responses from the events team have been positive. It's hard to say what the most successful part has been, but I think the video production system is very good and the LED displays are great. Many of our visitors have given positive feedback on the sound system and the arena by night lit by LEDs and controlled by Crestron dimming equipment.

"We are generally very pleased with the whole arena and we expect to attract a lot of events here." ❧

Tech-Spec

Video

- Atlona AFHD4-V110 HD-BaseT extenders
- Blackmagic Design - ATEM Switcher
- Crestron MC3, C2N controllers; DM-MD32x32 matrix; DM-RMC-100 room manager; DM-TX-201 extenders; IPMC-V12-B touch panel
- Mitsubishi LDT-462V LCD panels
- Panasonic AW-HE50SE PTZ cameras
- Sqvadrat LED display system + controllers
- TV One Corio 2 series scalers