

A FUNCTIONAL & FUTURE-PROOF DESIGN FOR Toronto FC's Kia Training Ground & Academy

By Andrew King

It's a principle that applies to virtually any industry – cultivating talent, in most cases, reaps significantly greater rewards than simply purchasing it. It was with this very principle in mind that, in the second half of 2011, Maple Leaf Sports and Entertainment (MLSE) announced plans to build its \$21 million Toronto Football Club Kia Training Ground & Academy at the city's Downsview Park for its soccer franchise.

The facility, which borrows inspiration from athletic academies in the more football-frenzied European market, includes four natural and artificial fields and is focused around a 40,000-sq. ft. building that hosts dressing and dining rooms, a significant strength and conditioning centre, administration offices, a presentation theatre, and other amenities for the development of Toronto FC's senior team – the one that takes to BMO Field for each home game of the Major League Soccer (MLS) season – as well as its developing academy squads.

MLSE's position as a multi-sport franchise operation gave its administration a head start in understanding the infrastructure required to have the first-class facility meet the needs of its athletes and auxiliary personnel. Of course, this included the A/V components, which would need to put state-of-the-art capabilities and functionality into the hands of athletes and coaching staff – a user base with understandably limited technical savvy.

David August, Manager of Venue Technology and Production with MLSE, was the primary overseer of the system design and implementation on behalf of his employer. August began researching what the various sections of the building would require and then determined which products would ensure a fully faceted and future-proof A/V system for the facility and aid in its goal of inspiring athletic excellence at every level of the club. For the audio components, he relied heavily on input from colleague Courtney Ross, the Lead Audio Engineer with MLSE.

"There were two things we were focusing on when putting together the outline," August begins. "First, we often approach A/V as a coaching tool, so it had to be designed in a way that would help coaching staff communicate with players," he says, listing capabilities such as the integration of media playback, video and image manipulation, support for local and visiting PCs, reliability, and ease-of-use as extensions of that. "The other aspect is that the training facility is really a home for the players during the week – they train there, they dine there, and they relax there, so we wanted to make sure they had some functionality and a certain level of enjoyment – some creature comforts for what can be a high-stress environment."

The facility was broken down into four main zones – the gymnasium, first team dressing room, the dining area, and theatre space. From there, the gymnasium and dining rooms were segmented once again into sub-zones, keeping consistency throughout the spaces at-large but allowing more independent control for those sharing the spaces.

The project went out to tender, with MLSE calling on a number of past collaborators to submit bids. "We were targeting integrators we've worked with before, and when we were reviewing bids, the process was really two-fold," August explains. "We wanted to ensure the bids were complete, and we were scanning them really closely for any holes, but with that, we were looking for places where they may have found holes in our spec, meaning they've thoroughly reviewed the smallest details. That really inspires confidence in us."



"I looked at the spec and it really fit the kind of work we do," comments RP Dynamics Senior Account Manager, Cynthia Wong, CTS. RP Dynamics' bid was accepted and the firm's work was underway. "From our standpoint," adds Wong, "I'd like to believe what [MLSE likes] about working with us is our attention to detail – whether it's colour-matching components or speaker layout, everything is re-verified and reconfirmed before we begin."

Tying the audio system together across the various zones is Rane's relatively new HAL DSP platform and its complementing RAD2s (Remote Audio Devices) to offer inputs and a variety of controls with simple operation that suited the space and offered plenty of flexibility and a foolproof experience for daily operation.

In total, RP Dynamics installed Rane RAD2s in five locations throughout the facility, each offering XLR, stereo RCA, and 3.55 mm inputs for simple plug-and-play operation in the various spaces. Along with the input panels came five complementing DR3 digital smart remotes that, via two knobs and a backlit programmable LCD display, offered volume control for the different sources. Finally, each RAD2 station features a Crestron dock welcoming iOS devices.

Comments August: "There is a wide spectrum of people using the system, and some aren't technically-oriented, nor should they be if their objectives in the space are to focus and train. We wanted the best flexibility with the simplest and most informative control panel, and the HAL platform met those needs perfectly." He adds

that, regarding audio quality, the A/D converters offered by the RADs right at the input panel plus its digital audio over Cat-5 back to the central HAL1 processor in the equipment room offered broadcast-quality audio throughout the entire system.

The HAL platform also fit with the mandate of achieving high levels of functionality, user friendliness, and considerable potential for future expandability. "I quite liked the Rane product because of that," states Wong. "It was a lot easier to operate than I initially thought it would be."

Mike Sones, Senior Technician with RP Dynamics and the project manager and lead programmer for the Kia Training Ground & Academy, elaborates: "An open-source DSP is always easier to control," and adds that since the platform is entirely Cat-5 based, the electrical contractor was able to handle all of the wire pulls, resulting in minimal troubleshooting and labour costs.

It also reduced costs for wiring infrastructure and the need for additional components as the platform maximizes its use of pairs in a typical Cat-5 cable and relays signals upwards of 500 ft. – notably high for an Ethernet-based product – between the RAD2s and the main HAL1 unit in the control room. What's more, each unit confirms that the wiring is properly terminated, saving time during the physical integration.

"The HAL control panels are nice and simple," Sones continues. "They do exactly what they're supposed to; they're easy to program and easy to use." The ease of programming can largely



GYMNASIUM WITH RH CFX121s & CFX12S,
PLUS LOFT (UPPER LEFT) WITH CF61s.



SPORTING EQUIPMENT

A list of select components comprising the A/V system at TFC's
Kia Training Ground & Academy, courtesy of RP Dynamics.

ZONE 1.1 - LOWER GYMNASIUM

- 2 x Renkus-Heinz CFX121 12-in. Full Range Loudspeakers
- 1 x Renkus-Heinz CFX12S Subwoofer
- 1 x Rane DR-3 Selection & Level Remote
- 1 x Crestron CEN-DOCV-DSW Wall Mount iPod Dock
- 2 x Rane RAD2 Audio Input Plates (XLR3F, 3.5 mm, 2 x RCA)

ZONE 1.2 - GYMNASIUM LOFT

- 2 x Renkus-Heinz CFX61 6-in. Full Range Loudspeakers
- 1 x Rane DR-3 Selection & Level Remote

ZONE 2 - FIRST TEAM DRESSING ROOM

- 1 x SMART SBID-L450-MP Interactive Display Overlay For Select 50-in. Large Bezel Flat Panel Displays (Includes SMART Meeting Pro Software)
- 2 x Renkus-Heinz CFX81 8-in. Full Range Loudspeakers
- 1 x Renkus-Heinz CFX12S Subwoofer
- 1 x Rane DR-3 Selection & Level Remote
- 1 x Crestron CEN-DOCV-DSW Wall Mount iPod Dock
- 1 x Rane RAD2 Audio Input Plate (XLR3F, 3.5 mm, 2 x RCA)

ZONE 3.1 - FIRST TEAM DINING ROOM

- 2 x Renkus-Heinz CFX81 8-in. Full Range Loudspeakers
- 1 x Rane DR-3 Selection & Level Remote
- 1 x Crestron CEN-DOCV-DSW Wall Mount iPod Dock
- 1 x Rane RAD2 Audio Input Plate (XLR3F, 3.5 mm, 2 x RCA)

ZONE 3.2 - DINING ROOM

- 2 x Renkus-Heinz CFX81 8-in. Full Range Loudspeakers
- 1 x Rane DR-3 Selection & Level Remote
- 1 x Crestron CEN-DOCV-DSW Wall Mount iPod Dock
- 1 x Rane RAD2 Audio Input Plate (XLR3F, 3.5 mm, 2 x RCA)

ZONE 4 - THEATRE ROOM

- 2 x Renkus-Heinz CFX81 8-in. Full Range Loudspeakers
- 1 x Mitsubishi WD8200U 6,500-Lumen 1280 x 800 Projector
- 1 x Custom Projector Ceiling Mount
- 1 x Draper Targa Motorized Front Projection Screen, 16:9 Format, 106 in. H x 188 in. W XT1000e Surface With Low Voltage Controller
- 1 x SMART SP518NP Podium 518 Interactive Pen Display With SMART Meeting Pro Software
- 1 x Shure MX418/C Gooseneck Microphone
- 1 x Custom Input Plate With HDMI & VGA + Audio Inputs
- 1 x Crestron TPMC-4SMD Touch Panel Control
- 1 x Crestron PWE-4803RU PoE Injector
- 1 x Custom Wireless Keyboard & Mouse
- 1 x Custom PowerPoint Trigger
- 1 x Exact Furniture EF-PM-550 Wooden Podium, Wired With XLR Connections

RACK EQUIPMENT & COMPONENTS

- 1 x Middle Atlantic BGR-45SA-32 Equipment Rack
- 6 x Middle Atlantic LL-VC21 Leverlock Vertical Channel Laces
- 6 x Middle Atlantic LL-HC21 Leverlock Horizontal Channel Laces
- 1 x Middle Atlantic Lacing Bars Set
- 1 x Middle Atlantic VFD-45A Vented Front Door
- 4 x Middle Atlantic LF-HD Leveling Feet
- 1 x Middle Atlantic VBK-BGR Vent Block Kit
- 1 x Middle Atlantic BGR-276FT-FC Thermostatically Controlled Fan Top
- 1 x Denon DBP-1611UDP Blu-ray Player
- 1 x Extron 60-770-01 AVT 200HD ATSC & HDTV Cable Tuner
- 1 x Shure SLX124/85/SM58 Wireless Handheld Mic/Lav Combo Kit
- 1 x Crestron CP2e Controller
- 1 x Crestron PW-2420RU Power Supply For CP2e
- 1 x Crestron TPMC-4SMD Touch Panel Control
- 1 x D-Link PoE Switch
- 1 x Biamp Nexia TC Teleconferencing DSP
- 1 x Kramer VP-729 Scaler Switcher
- 1 x Custom Input Plate With VGA & HDMI
- 1 x Rane HAL1 Audio Processor
- 1 x Rane EXP1 Expander Port For HAL Processor
- 1 x Furman M-8x2 Power Conditioner
- 1 x Surgex SA966 Surge Protection For Rane HAL1 Processor
- 1 x APC BE-350G UPS
- 5 x Lab.gruppen E4:2 Power Amplifiers
- 1 x Lab.gruppen E12:2 Power Amplifier



THEATRE WITH EXACT CUSTOM PODIUM & RH CFX61S FOR LOCAL & NETWORKED CONTENT ACCESS.

CRESTRON DOCK & RANE RAD2 & DR3 FOR SELECTING INPUTS.



ATHLETES' LOUNGE WITH RH CFX61S

be attributed to the internal grouping of multiple processing devices within the system, meaning EQ, mixers, and routing matrixes come as pre-arranged "packages" to reduce programming time and, subsequently, cost.

"The nice, small panels work really well with the facility, too," he adds. "They give the feedback the users need and basically handle everything we need them to."

The system in the theatre is slightly more elaborate to that in the other spaces thanks to its inclusion of user-run video components as well as a SMART interactive pen display for the custom podium by Woodbridge, ON's Exact Furniture.

"They needed video source switching and also have teleconference capabilities, where they can call in and out of that room for remote meetings," explains Sones, adding that the teleconference DSP comes courtesy of a Biamp NEXIA TC box in the equipment room. Originally, Rane's AEC (Automatic Echo Cancellation) was specified to round out all of the DSP, though the product wasn't yet available when the system was installed. The podium is loaded with a Crestron TPMC-4SMD touch-screen interface to control the video sources as well as the levels and switching for HAL via the master CP2e in the equipment room. "It brought everything together to work over the little 4-in. touch screen," says Sones of theatre's control architecture.

But the more elaborate programming was limited to the feature-rich theatre. As previously noted, simplicity and ease-of-use was the target for the other room controls, and thus control for the rest of the facility was left to the more-than-capable Rane components.

A complement of Renkus-Heinz speakers was implemented across the facility to address the specific needs of each zone. Two CFX121 12-in. full-range cabinets and a single CFX12S 12-in. subwoofer were used for the main gymnasium, which are occasionally pushed to dance-floor level SPLs to motivate trainees. An additional pair of CFX61 HF enclosures occupies the gymnasium loft for less volume-intensive applications.

Another combination of CFX81s and CFX12S subs was installed in the first team dressing room, as well as pairs of CFX81 full-range boxes in each dining room for both music reproduction and also speech-oriented presentations. Rounding out the reinforcement package is a pair of CFX81s in the theatre space.

Sones notes that the decision to opt for Renkus-Heinz product for reinforcement was largely influenced by MLSE's history with the product and its Canadian distributor, Contact Distribution, which also provided the HAL equipment. "The history there was 90 per cent of that decision," Sones notes, "and we know those products work really well, so we were definitely pleased."

August elaborates: "We installed a pair of [Renkus Heinz's] Iconyx ICLive digitally-steerable arrays within the video wall in

Maple Leaf

Square, and can cover that entire area with only two speakers. [The training facility] is an open-concept building, so we wanted a bookshelf-style speaker – something that had both power and clarity, so when we're delivering in that highly reverberant environment, we're still getting great sound. We've found the Renkus equipment to have that balance, and it was a product that Courtney [Ross] really endorsed."

Other fruits of existing relationships came in the form of various LG commercial displays that were provided directly by the company but integrated by RP Dynamics. Rooms with the RAD2 feature audio from the display as an input source, along with the microphone and local inputs.

"The TVs were tuned to a digital over-the-air channel on a feed from coax, and then they were able to create their own channels, so they could choose which stations went to which channels and also air their own content," explains Sones of what he calls one of the more interesting components of the project. Rogers installed an IPTV system fed via RF for the units' ATSC tuners. "It's a really unique system that works really well for that space," Sones adds.

And if it hasn't been emphasized enough, equipment that fit the facility and provided the necessary functionality in an easily operable package was the goal for TFC's Kia Training Ground & Academy. What's more, thanks to the DSP platform, future additions to the system would be easily handled.

"Robust and reliable is definitely best when we're talking about coaches and athletes," comments Sones in summation. "It's very easy for them to do what they want with this system, and that's what we were called in to deliver."

And deliver they did – a solution for a facility that will cultivate talent for Toronto's professional soccer team for years to come and, hopefully, lead to some future MLS playoff berths for the young but burgeoning Toronto FC. ■



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