



Hasselt Cultuurcentrum

Een nieuwe schouwburg

MULTI CHANNEL REVERB FOR THE SMALLER THEATER



MCR loudspeakers also provide delays and surround

The Ampco / Flashlight Group sales and installation companies Ampco Belgium and TM Audio, and sister R&D division TeamProjects, came together again on a new MCR (Multi Channel Reverb) installation in early 2007.

Their first project, the Kursaal in Oostende, went on to win an Installation Europe Award in 2006, and has since spawned other MCR systems by the group, in conjunction with Dutch acoustic consultant Cees Mulder, who played a key role in designing the original concept.

This new project demonstrated how MCR can be used to adjust auditorium acoustics to suit every performance, in smaller venues than the multi-million Kursaal rebuild.

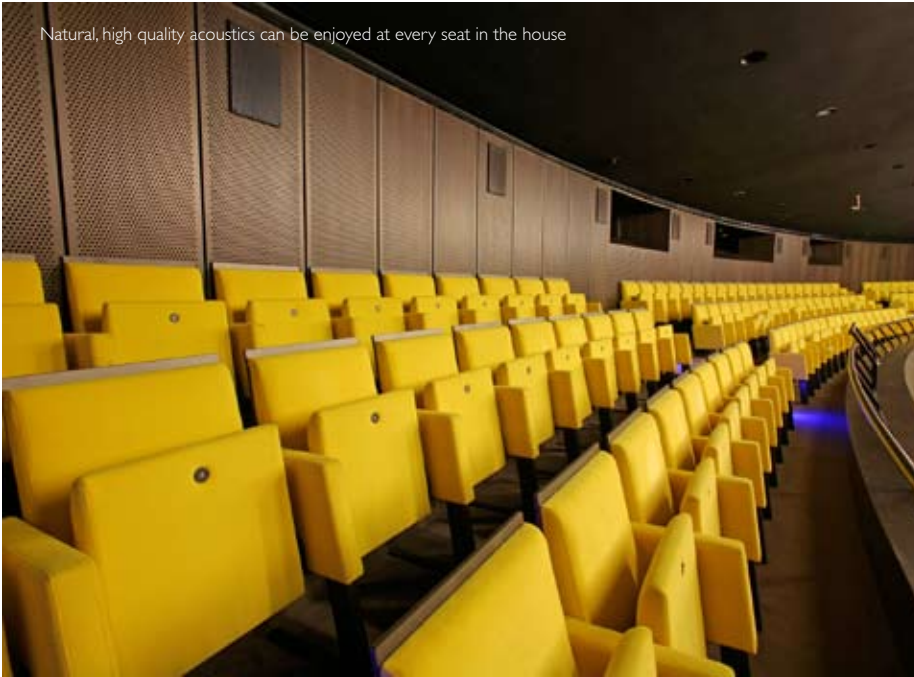
Located in the Belgian town of Hasselt, 86km east of Brussels, the Cultuurcentrum's new

890-seat theatre features a combination of main proscenium PA and a multi-functional, distributed side and rear system that doubles up as MCR, surround sound, main PA delay and voice announcement system.

The building is part of a complex, built in 1969 by renowned Belarus-born architect Isia Isgour. Like many such regional projects, its construction was a statement of Flemish cultural independence, a by-product of the political and cultural divide that opened between Belgium's Flemish and French parts in the late 1960s.

The local authority-owned auditorium was built in a remarkable four months in 2006 on the site of an older theatre and was designed to bring some of the cultural delights of the capital to the regional market town. A sleek, modernist design by Hasselt based architects

Natural, high quality acoustics can be enjoyed at every seat in the house



MCR IN ACTION HASSELT

A2O, it replaced the old venue's cramped seating, poor sightlines, limited disabled access and indifferent acoustics with a venue fit for the 21st century, and opened in December. Intelligent touches are everywhere from the custom designed, well spaced audience seating to the dual-tone beech wood floors and walls, and a stage which can be extended with two hydraulic orchestra lifts.

Acoustic treatment and diffusion panels among those surfaces produces a low RT of 1.0-1.1 seconds, an ideal base from which to add precisely tailored reverberation enhancement of up to 1.8 seconds.

NATURAL VIBRATIONS

Utilising – as in Ostend – Renkus-Heinz loudspeakers throughout, the MCR function sees natural room acoustics picked up by an array of microphones, processed and fed back into the room by a matrix of small loudspeakers of precisely specified Q. The heart of the system is a Peavey Nion hardware platform, running custom MCR software developed by Team Projects in conjunction with Cees Mulder. It's controlled via a straightforward GUI running on a tablet PC over wireless LAN, enabling control from any seat in the house.

"A lot was learned from the Kursaal project in Ostend," says Ampco Belgium's project manager Steven Kemland, "by ourselves, and also by the theatre world in Belgium and Holland, which had not realised exactly what an MCR system could do and what the commercial benefits could be.

"The old theatre here, being relatively close to Brussels and lacking modern facilities and acoustics, found it very hard to attract classical fans, so the objective was to create an acoustic environment in a medium sized theatre that would rival the big places in the city. With MCR, they now have acoustics as good as anywhere in Brussels and sell out

most concerts."

The principle of MCR has been around in the theory for a long time, but it has taken recent developments in both DSP and loudspeaker technology to make it practical and affordable. In technical terms one of the keys to bringing the pioneering Kursaal installation to life in the first place was Cees Mulder, who carried out detailed research into the behaviour of individual loudspeakers. As a result, says Kemland, "We now all understand the true importance of the Q of a loudspeaker in this application".

A four-way discussion between A2O, Mulder, Kemland and the then-technical director Raf Wouters explored the practical possibilities of an MCR system for Hasselt, given the design of the auditorium, and examined options for loudspeaker choices, locations and colours, with the consideration that every visible aspect of the system must conform to the aesthetics of the new interior; as well as providing the desired acoustic results.

As in Ostend, Renkus-Heinz's ability to produce custom versions of its standard products was an important factor; according to Kemland. "We worked with [Renkus-Heinz VP of R&D] Ralph Heinz to create a special version of the TRX 81 and TRX 61 two-way loudspeakers," he comments. These baffle-only versions are designed for flush mounting in the walls, in a similar fashion to car loudspeakers, and only the grilles, coloured to match the dark beech walls, are visible to the audience. These loudspeakers – 44 in all, spaced around the walls and rear wall of the stalls and balcony – are driven by 11 Powersoft Q 3002 R Series amplifiers and fed by a network of 36 Audio Technica AT3032 omnidirectional condenser microphones in the ceiling and walls, with eight AT U841A boundary microphones in the balcony faces. Sinewave lighting dimming, supplied by Candela, was also installed to keep background noise to a bare minimum.



"We worked with Renkus-Heinz's VP of R&D, Ralph Heinz, to create special baffle mounting versions of the two-way loudspeakers"

MCR IN ACTION HASSELT

The MCR
loudspeakers are
discretely recessed
into the theater's
walls



Simple to use: remote wireless control via Tablet PC

More prominent is the Renkus-Heinz centre cluster of four Renkus-Heinz SR5 full-range loudspeakers, with left and right pairs of STX4 Cabinets and four more SR5s for the first 12 rows, with a pair of BPS 15-2 mobile subwoofers on the stage wings. 16 extra TRX 61/81 standard full range speakers provide under-balcony and side delays and frontfills. The FOH system is driven by Crest Pro 200 amplifiers and controlled by the same Nion network, allowing one-point software control of the complete venue in any application. The MCR tablet PC's GUI offers reverberation enhancement presets of between 1.1 and 1.8 seconds, divided into three groups – symphonic, opera and chamber or choral music, each of which has a

normal, short or long RT setting. For maximum flexibility, the MCR system can remain active while the loudspeaker matrix is in use as main PA delays or for voice announcements – maintaining the natural illusion of space in every mode, and giving this new theatre an operational flexibility the original architects could only have dreamed of.

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Hidden loudspeakers feature Complex Conic horns

