

The University of Copenhagen has cleverly added a brand new tower to an existing complex. Anna Mitchell explores the AV installation – that includes three Meyer Sound Constellation systems – with local integrator Stouenborg.

# Aiming high

A towering facility has been added to the Panum complex at the University of Copenhagen to house lecture and research facilities focused on the study of health and disease. The 15-storey Mærsk Tower contains three auditoriums, 16 lecture rooms, laboratories, classrooms and meeting and socialising spaces all packed with technology, part of an AV project designed, specified and installed by Stouenborg.

The facility was designed with floors grouped into sets of four that are linked by open atriums. This effectively connects different spaces and provides a sense of openness as well as cleverly delivering light throughout the tower.

It was designed following a competition staged by The Danish Building and Property Agency and Copenhagen University and won by C.F. Møller. A public-private partnership between A.P. Møller Foundation and the Danish state was formed to build the DKK 1.5 billion

(approximately €200 million) building.

Stouenborg was involved in the project from the beginning so was able to get in at the first stage to install an extensive fibre infrastructure stretching to 22km in length. Crestron DigitalMedia systems manage signal distribution throughout the building and a Onelan Reserva room booking system (powered by Onelan players and accessed via 10-in info-screens), connected directly to the network, allows reservation of the spaces.

A digital signage network runs through the building with content, run by Onelan, displayed on Panasonic 42-in LCDs that are wall-mounted

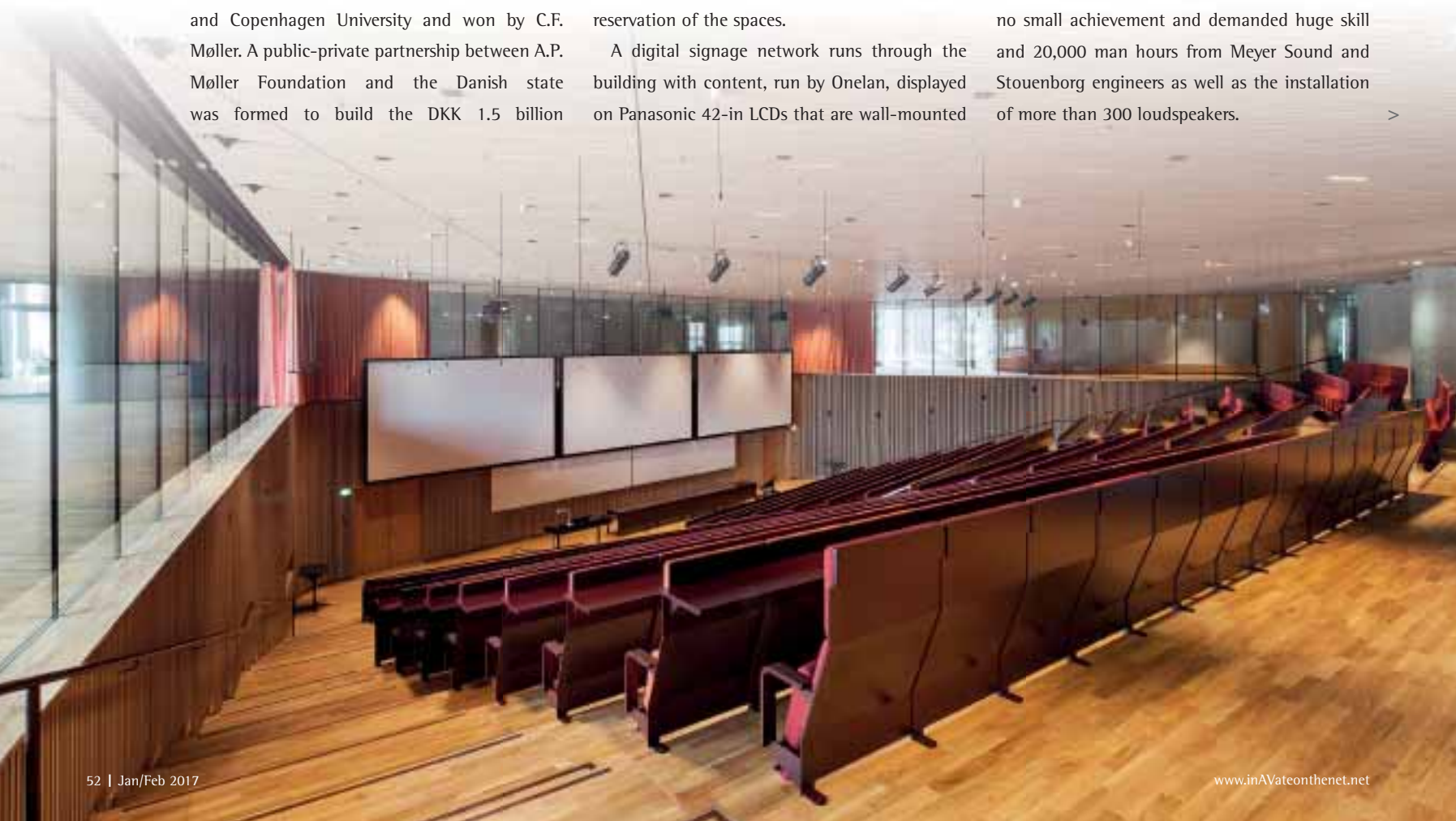
in custom designed housing.

The building is organised with three large-scale auditoriums, restaurants and social spaces on the lower floors and further classrooms, offices and laboratories situated in the floors above. It's topped with an area reserved for a viewpoint, a Faculty Club and a conference area.

Three auditoriums boast Meyer Sound Constellation systems. Installing three of these high-specification, top range audio systems was no small achievement and demanded huge skill and 20,000 man hours from Meyer Sound and Stouenborg engineers as well as the installation of more than 300 loudspeakers.

“ *Biamp Tesira, using AVB, was selected for DSP and is used extensively [throughout the building].* ”

- Anders Jørgensen, Stouenborg





[L-R] The smallest auditorium with a Meyer Sound Constellation system; Sixteen 30-person lecture rooms were provided; a signage network runs through the tower.

< In addition to fine-tuning the delicate combination of microphones and loudspeakers, Stouenborg's Anders Jørgensen notes that, while the Constellation System delivers a very powerful effect, it picks up and processes every tiny noise. Therefore, noise had to be removed from the auditoriums, which is easier said than done when they are full of hard surfaces and and potentially noisy AV technologies.

In the largest auditorium, which contains 504 seats, Stouenborg custom built a frame for the Projecta projection screen which absorbed noise as well as special housing for the Panasonic projectors that offered air circulation while muffling the noise the units make.

This space proved the hardest to install the loudspeakers in. The ceiling features a number of parallel lines as part of the architectural design.

However, the lines run the opposite way to the parallel rows of seats below which made it challenging to install the loudspeakers in the correct positions.

The kit required for the system was immense with 89 microphones, 124 loudspeakers and 19 networked D-Mitri frames, including core processing, D-VRAS and I/O installed. In addition to MM-4XP and MM-4XPD self-powered loudspeakers, Stouenborg provided MM-

10XP subwoofers.

A demonstration of the Constellation system reveals an immensely powerful tool. A presenter's voice is taken to every space in the room and sounds natural and not strained. When in "Q&A" mode any speaker at any position in the hall can join the discussion and be heard by classmates and the presenter. The systems can even support musical performances.

"This is important for teaching," says Jørgensen. "The lecturer can be free, there are no microphones and no boundaries. The research on the power of these systems in education is hugely compelling and is expected to even translate into better grades for students."

Pernille Illum, project consultant with the A.P Møller Foundation, says: "We expect that the Constellation systems, in conjunction with other state-of-the-art AV technologies within the auditoria, will introduce the highest possible quality of sound. This will drive further developments in teaching and communication, benefitting students as well as international conferences. We expect these auditoria to

**“ We expect that the Constellation systems, in conjunction with other state-of-the-art AV technologies within the auditoria, will introduce the highest possible quality of sound. ”**

- Pernille Illum, A.P Møller Foundation

become widely known and sought after for these unique qualities.”

“The systems also will support extended use of blended learning practices – known to help the study environment,” adds Lars Ole Munch Nissen, architect with the University of Copenhagen.

One lecture space was designed to facilitate group discussion and incorporates two projectors for presentation.

The flexible, open space can accommodate 220 people and incorporates a number of tables rather than traditional tiered seating. Here, Constellation can be used to isolate each table discussion so groups can work together without sound leaking to adjacent tables. In presentation mode, the system lifts the presenter's voice to naturally deliver it to every space in the room.

The smallest of the three auditoriums uses Meyer Sound steerable column arrays and Panasonic LED projectors. Panasonic dome cameras capture proceedings, with feeds piped in to a Cisco lecture capture system.

Lecturers can gain access to the university system and their saved and shared content via a

## Tech-Spec

### Audio

Biamp Tesira  
Meyer Sound, loudspeakers, Constellation systems and D-Mitri processing  
Sennhiser wireless microphones  
Work Pro loudspeakers

### Control

Aflona matrix switchers  
Crestron DigitalMedia 3.0, touchpanels, CP3 control systems  
Neets pushbutton control panels  
Onelan Reserva room booking  
TSL MDUs

< Wacom touchpanel located at the presentation podium at the front of the room. This position also offers VGA and HDMI inputs in case presenters prefer to link a laptop or device to the system as well as an Elmo L-12iD visualiser. Content can be annotated and manipulated via the Wacom display and projector screen content is controlled by a Smart Graphics interface.

Sennheiser wireless microphones are provided for presentation and were specifically requested by the university and used throughout the building. Jørgensen notes: Biamp Tesira, using AVB, was selected for DSP and, once again,

is used extensively in other areas.”

The space and content for presentation is controlled via an interface designed by Stouenborg and accessed with a Crestron touchpanel. The interface was designed to deliver operations with no more than five clicks. Using the touchpanel controls the

### Tech-Spec

#### Video

- Chief brackets
- Cisco lecture capture system
- Elmo L-12iD visualisers
- Panasonic LCD panels, LED projectors and dome cameras
- Projecta projection screens
- Microsoft Surface Hub
- Wacom touchpanel

“ The [AV] systems also will support extended use of blended learning practices – known to help the study environment. ”

- Lars Ole Munch Nissen, University of Copenhagen

lecturer can easily create a bespoke streamed output, selecting sources and camera angles to create useful materials for students after the lecture.

Interfaces were designed with a focus group of university staff to ensure they were suited to their needs and were based on other devices the staff were used to using, such as iPhones.

Crestron DM systems handle each space with I/Os ranging from 8x8 to 32x32, for the largest lecture halls. The DM systems allow the spaces to be linked together to accommodate overspill when required and potentially accommodate an audience of 1,100.

Halls also have their own Crestron CP3 control system. TSL equipment handles power management and in case of surges or other

power problems the system delivers email alerts and TSL MDUs power up and down the equipment in sequence.

Each auditorium also has its own control room and during a lecture can have a dedicated operator.

Sixteen small lecture rooms are located around and above the auditoriums. Each room can house 30 people and are designed so they are divisible into two separate spaces. Control in these rooms consists of a slightly simplified version of that offered in the lecture halls with the Crestron touchscreen replaced by Neets pushbutton control panels. Rooms house two large whiteboards, two projectors (Panasonic PT-VZ575NAJ) and two two projection screens from Projecta. Audio is delivered via Work Pro loudspeakers.

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< Stouenborg cleverly integrated control and distribution equipment within a custom built desk, removing the need for central rack rooms and keeping signal distribution local to each classroom. Here, an Atlona matrix switcher (AT-UHD-CLSO-824) handles HDBaseT signal distribution and in-built mixing. The Atlona kit can handle streaming if required

by the university in the future.

The desks themselves are built by Montana, a Danish furniture company,

and offer motorised height adjustments to deliver comfort to teaching staff.

A trip up to the top of the tower reveals open spaces with floor-to-ceiling windows, offering a panoramic outlook on Copenhagen. This 15th floor area combines small meeting rooms, offices and break out spaces for PhD researchers and lecturers.

Technology has been designed to facilitate presentation and communication between teams with Panasonic projectors and Projecta screens, as well as two Microsoft Surface Hub units, available in meeting rooms and presentation spaces. Input panels allow researchers to share content from their laptops and devices via VGA or HDMI.

Sound reinforcement is delivered by a mixture of Meyer Sound's Stella 8C ceiling speakers and MM-10 XPs.

Meeting rooms on this floor set a template that is copied

throughout the building. Two 65-in Panasonic TH-65-LFE8 LCDs are mounted side-by-side on Chief brackets. Because the researchers and scientists are working with data sets it was essential they had two large screens, one for data visualisation and the other for videoconferencing. Web-based conferencing is currently the method of communication, but there are plans for a future dedicated Polycom system.

No expense was spared in the technology specification for this resource which extends the total floor space of the Panum Institute by 40%. AV systems have been chosen to accommodate modern learning styles and the content being discussed and researched by the faculty. But, the crowning achievement is clearly the three Constellation systems that transform the auditoriums from well-equipped spaces to cutting-edge learning environments. The opening of the building was phased to allow time for test-lectures and ensure all systems were up and running in perfect order before a grand royal opening in January 2017. ♡

Artist's impression of the Mærsk building



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Dubai's latest shopping destination is putting on a show for punters. Anna Mitchell heads to the UAE to explore an impressive multimedia performance at City Walk with executive producer Float4 and installer XYZ Cultural Technology.



# Crowd pleaser

**C**ity Walk is Dubai's latest mixed used development and incorporates residential, retail, hospitality, leisure and entertainment facilities in one destination. A network of streets containing cafes, restaurants, shops and even a gaming park come together in a central plaza built around a water feature.

Dubai-based holding company Meraas, owner

of the City Walk development, wanted to use media and AV technologies to create a destination with a unique visitor journey and provide entertainment as well as provision for digital advertising.

An ambitious vision started with the water feature but grew to encompass a dizzying range of digital media elements incorporating projection and LED displays combined to deliver more than 100 million pixels.

*“ We make sure the technology and content works together and is properly defined. We understand the creative and the implications of the technical. ”*

*- Alexandre Simionescu, Float4*

Multiple AV companies were engaged in the project. A total of 30 Digital Projection projectors had been specified by Dubai integrator RDK International and 30 LED installations in 21 different formats from Dubai headquartered Pixcom were delivered before Float4, a Montreal-based studio specialising in digital experiences, was brought into the project.

Float4 was tasked with content creation and design of the head end system. However that scope grew as the project went on to include the design of a custom built projection system for the water feature. Float4 employed a fellow Montreal company XYZ Cultural Technology, which handled much of the system design and

integration required.

“We came in at a point where a lot of decisions had been made with regards to each individual feature,” explains Alexandre Simionescu, co-founder of Float4. “Our role in these projects is really as an executive producer. We make sure the technology and content works together and is properly defined. We understand the creative as well as the implications of the technical.”

Float4 started work on creating a single headend system to feed all the digital displays.

“A lot of work was put into creating a harmonised headend solution that provided flexibility, performance and reliability,” Simionescu says. “A requirement for the project

## Tech-Spec

### Audio

Apart loudspeakers  
Biamp Tesira  
Bose subwoofers  
Meyer Sound column speakers

### Video and control

Digital Projection TITAN 930 projectors  
Christie projectors,  
Pandoras Box servers  
Crestron DM matrix switchers  
Medialon show control system  
Tempest projector enclosures