

State-of-the-art AV Technologies Implemented by Hoang Minh Intech Joint Stock Company

Distinctive Architecture and Design Characterise the British University Vietnam New Campus Exceptional Experience



The British University Vietnam (BUV) was established in 2010 and is the only international university in Vietnam to offer British education and degrees. The original campus was a city campus located in the heart of one of Hanoi's main financial districts. BUV offers degrees associated with other established universities from the United Kingdom. These include programmes with Staffordshire University in International Business Management, Marketing Management, Accounting and Finance, as well as Tourism Management, Event Management, Contemporary Creative Practice: Graphic Design/ Illustration/ Photography and Computer Games Design and Programming that all lead to a BA.(Hons) Degree. In 2014, BUV officially became a registered centre of University of London International Programmes, one of 70 such centres worldwide, the only one in Vietnam and now offers the University of London Bsc. (Hons) Banking and Finance.

BUV also kicked off its own approved programme in 2015 with a BA.(Hons) in Finance and Economics and BA.(Hons) International Hospitality Management in 2018 with more programs to be launched in 2019. BUV also conducts a Master of Business Administration programme (MBA) which is awarded by Staffordshire University. All

of the lectures are conducted in the English medium with language bridge pathways offered for those who need it.

The local citizens quickly acknowledged BUV's teaching capabilities and recognised degrees, and it was only a matter of time that the city campus reached its full capacity with a waiting list. This prompted the University's management to plan for a larger campus which resulted in the BUV Ecopark Campus that saw students starting their classes in their pristine new campus in August 2018.

BUV at Ecopark

The BUV Ecopark campus has three phases with the first phase having been completed recently, being able to accommodate up to 2000 students. With the completion of the other two phases, the university can accommodate a total of 7000 students. With an investment of over USD25 million, the new campus looks not only impressive but also offers state-of-the-art facilities.



Professor Dr Ray Gordon, Vice Chancellor and President, BUV

Professor Dr Ray Gordon, the Vice Chancellor and President at BUV comments, “BUV is well positioned and poised for growth. BUV’s new Ecopark campus in Hanoi is architecturally stunning and embedded with the latest by way of learning technology. Students will receive a learning experience that will enrich their development and prepare them for work and life”.

Professor Gordon highlights that BUV also offers professional development courses based on the trends of job demands for all students. Further, plans include bringing postgraduate programmes from Staffordshire University. “We have seen exponential growth in our intake and with the quality programmes we are providing, we expect to see our student intake continue to grow.”

About the new campus, Professor Gordon highlights, “The building is distinctive and caters very much to millennial students. With regards to the technologies implemented in our campus, we see it as part of a bigger picture. It helps to facilitate learning through engagement and collaboration not only between the lecturer and students but amongst the students as well. It enables discussions, exploration and collaboration not only aurally but virtually in real time through the use of technology. For instance, our students work on problems solving activities with other students from our partner Universities. Virtual problem solving is one of the many technology-oriented tasks graduates will also be involved with when they join the workforce.”

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AV consultant’s input

Kyirman Bin Badrun, Project Coordinator Director, Audio Visual & Acoustic Department of Juru&Teras Bersekutu Sdn Bhd, based in Malaysia, was the appointed AV consultant for the new campus. “We took into consideration what the University wanted to achieve and implemented proven technologies for the learning process with AV technologies used for collaboration within the classrooms. AV solutions were also implemented to engage the student’s senses in the other spaces such as the auditorium and multi-purpose halls.”

“The design intent was to assist BUV’s teaching and learning processes via suited AV technology – with emphasis mitigated for performance and ease of use. Though nothing ever falls in place perfectly with so many parties involved from the architect and various consultants team to the different contractors, we achieved a smooth implementation through coordination and co-operation from the AV system integrator and support from the different AV equipment principals,” said Kyirman.

Hoang Minh Intech Joint Stock Company (HMIJSC) based in Hanoi took responsibility for the installation, integration and programming of the AV systems.



The mock-up Ticketing Tourism classroom

Classroom technologies

The BUV campus has a mix of different types of rooms for student learning. One is a standard classroom for typical lectures, and then there are mock-up rooms designed to create a scenario for students

to experience the environment of a specific space. These include a mock-up Restaurant, House Keeping, Front Office, Event, Travel Tourism and Ticketing Tourism rooms.

The standard learning classrooms and the mock-up rooms feature **Panasonic PT-TW350 short-throw LCD projectors** with sound

reinforcement provided by two units of **Amperes CS610 six inch ceiling speaker** driven by a single **Amperes PA330 amplifier**. HDMI signals are transmitted and received via **Aten VE801 extenders**. The exception being the Travel Tourism room that features higher lumens **Panasonic PT FW530 projectors**.



Discussion and Learning cluster room



X Space collaborative classroom

The BUV campus also features discussion and learning cluster rooms that are smaller in size and feature **Panasonic 43" and 55" LED displays** integrated within the rooms.

The three X Space collaborative classrooms, each feature two units of **Crestron SAROS IC6T 2-way in-ceiling speakers** powered by a **JBL CSA 1120Z power amplifier**. Video installation includes four units of **43" Panasonic LED TV**, and one unit of **55" Panasonic LED TV** with one unit of **Panasonic PT-TW350 projector**. The room consists of a **Crestron DM-MD6x6 DigitalMedia matrix switcher** that ensures ultra-fast digital video and audio switching and the ability to manage a range of signals with advanced HDCP support and EDID resolution management.

The collaborative rooms also feature a **Crestron CP3 integrated controller** that manages and integrates all the disparate technologies. A **4.3" wall-mounted Crestron TPCS-4SM touchscreen control system** allows lecturers to control the operations and environment in the X Space.



Mobile X Space classroom

A variant of the X Space is the Mobile X Space classroom that features a **Panasonic PT-TW350 projector** and **Amperes ceiling speakers** as well as five units of **43" Panasonic LED displays**. The LED screens are mobile thus enabling the lecturer to configure the classroom according to needs.

The Multimedia and Multi-Purpose Hall

The Multimedia room infrastructure, facilities and technologies are equipped for use in three specific mode of operations which is (i) lecture mode; (ii) satellite TV mode and (iii) cinema mode. Students/faculty with the need to use the room need to book the room. The school's technician will then set up the room and the equipment to suit the operational need of the specific mode.

Yamaha solutions dominate the Multimedia room. The room features a 7.1 surround sound system processed via a **Yamaha RX-V683 receiver**. Two units of **Yamaha NS 555, 3-way Bass-Reflex floor, standing speakers** placed in the front left and right and four units of **Yamaha NS B330 2-way acoustics suspension speakers** set surround left, and right and rear left and right together with one unit of **Yamaha NS C444 suspension centre speaker** and **Yamaha NS SW300 subwoofer** ensure that the **Dolby Atmos surround sound** experience is pleasant. A **65" Panasonic display** complements the audio system.



Multi-Purpose Hall



The equipment rack at the Multi-Purpose Hall

The Multi-Purpose Hall can be separated into two spaces via operable division walls when required. The hall once again features **Crestron SAROS ceiling speakers** as well as a **Crestron 8x4 DSP Matrix Mixer**. Two units of **Yamaha MCG16XU** consoles handle sound mixing.



The eye-catching facade of Learning Theatre 2

A mix of wired and **wireless AKG microphones** help with speech reinforcement. Three Panasonic projectors handle visual display. The main **4500 lumens projector** projects images onto a motorised **Draper Targa projection screen**. A zoned audio system enables the technical staff to control the sound accordingly.

“The multi-purpose hall was a complex set-up for us as we needed to ensure flexible control. The hall allows for different purposes such as for training, meetings or presentation, where two programmes could run simultaneously,” said Nguyen Truong Giang, Project Director, HMIJSC.

“Audio presets are implemented to lock on the audio systems functions to ensure it performed as either a fully open space or a divided space. There are two Touchscreen controls provided, and our staff worked hard to ensure that the programming in the background allowed for a seamless experience for the BUV staff.”

The multi-purpose hall also allows for video conferencing. To enable that, a Dell computer with Logitech webcam and omnidirectional table microphone array systems connected to an 8x8 Crestron DigitalMedia switcher are available.

“The multi-purpose hall is FSTC 45 certified. Carpets, vinyl and correct placement of speakers help minimise the sound spillage between the

rooms. The dividing panels are also acoustic panels that help contain the sound,” said the AV consultant, Kyirman. The rooms when split into two are generally used for presentations.

The crown jewel

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-Kyirman Bin Badrun

The Learning Theatre 2 is an auditorium styled space. The theatre is visible from the outside with its unique, eye-catching architecture and its multi-hued blue colour façade. The inside features a tiered 264 seating capacity with a 7.1 surround sound system. The theatre

can accommodate lectures, performances, screenings, presentations,



Panasonic 8,000 lumens WUXGA DLP Projectors

forums and seminars. It is not far fetched to say that the theatre is the crown jewel of the University.

“The biggest challenge with the theatre is its odd shape. There are no two walls alike, which makes sound intelligibility and dispersion a huge challenge. Plus the stage occupies a small space with a lower ceiling height,” said Kyirman.

The front of the hall features three separate Draper Premier front projection motorised screens. Projecting images onto them are three units of **Panasonic 8,000 lumens WUXGA DLP projectors**. The control room features a **Crestron 8x8 DigitalMedia matrix switcher** with the necessary cards for HDMI support and 3G-SDI support. Other than a **Sony Bluray player** for playback, the theatre also features a **Panasonic motorised pan/tilt 18x zoom camera** as well a **Panasonic super dynamic HD fixed camera**, all controlled with a Panasonic camera remote control unit. The PTZ camera faces the stage whereas the fixed camera faces the audience. A **Crestron Capture-HD unit** ensures full HD 1080P recording.

A Dell computer, Logitech webcam and table microphone array enable video conferencing. The video conferencing infrastructure works as a stand-alone solution.

Stage lighting features four units of **Philips Profile LED fixtures** hung on a truss facing the stage with a further eight units of Philips Showline SL LED Pars hung at the back of the stage with all fixtures controlled via a Philips Strand lighting console.



The surround sound in the Lecture Theatre is handled by Fohhn speakers

The pièce de résistance in the theatre is the surround sound system. The 7.1 high definition surround sound features Fohhn speakers with signal processing handled by a Crestron HD-XSP processor. The FOH live system features two units of Fohhn DLi 230 Digital Steerable Line Array Speakers and four units of Fohhn AT-31 Single 15” Subwoofers (used for 7.1 Playback system as well), powered by Fohhn DSP amplifiers.

The steerable arrays are installed to blend in with the stage wall and are conspicuous on the dark grey background. “When we introduced

Fohhn to the University management, there were doubts on its performance due to its compact size. Once we commissioned the system, all doubts and scepticism disappeared immediately. The management was pleased with what they heard,” said Kyirman.

The 7.1 Playback system features sound output from the four **Fohhn AT-31 subwoofers** as well as six units of **Fohhn AT-40 500W high-performance 2-way passive speakers**, installed at the front with ten units of **Fohhn AT-10 200W high-performance speakers** mounted at the side and rear of the theatre. **Fohhn DSP power amplifiers** drive the speakers.

The subwoofers were hung in the centre complemented with the **Fohhn AT-40 speakers** spread three across on the left and right of the subwoofers on the truss.

Mixing duties are handled by a **JBL Soundcraft Si Expression 3**. Microphones include a mix of **K&M and AKG systems**.

Nguyen Truong Giang of Hoang Minh Intech., JSC highlights, “This is likely the first project in Vietnam to use beam steering technology. Thankfully we got great support from the Fohhn distributor, Control Logic Systems (CLS) based in Singapore. Though it was a challenge to communicate with someone not based in Vietnam, with Skype, phone calls and personal visits by David Seow of CLS we managed to get the system running at optimum and to the satisfaction of the University.”

David and his team were also present personally to assist the system integrator to calibrate, tune and commission the sound system at the Lecture theatre.

The other challenge faced by the Hoang Minh’s team was the need to integrate the lighting and dimmer control as well as to ensure 2 to 4 audio presets for different use especially between Live and Playback. “There will be occasions when a live event has playback, and we had



The Fohhn DLi 230 Digital Steerable Line Array Speakers were also installed unusually at the back wall of the stage

to programme it such that the system quickly switches between the FOH and 7.1 Playback. We are also very grateful that Crestron helped us with their valuable input for all our programming needs,” said Truong Giang.

Though the space is not huge why there was a need for a steerable system and a 7.1 surround?

“The University wanted to create an immersive experience for its students and guests and thus the 7.1 surround system, which is mainly for playback use. As for the steerable, with the theatre’s unique shape challenge and space constraint the Fohhn steerable was able to reproduce uniform SPL coverage with high intelligibility across the theatre and yet be inconspicuous,” said Kyrman.

The **Fohhn DLI 230 Digital Steerable Line Array Speakers** were also installed unusually at the back wall of the stage. David Seow of CLS elaborates, “The speakers though placed at the back of the wall, have the audio steered above the head of anyone presenting on stage. The sound is being steered over the presenter’s head and then down towards the audience. It is a little bit tricky to achieve this, but if one understands the physics of frequencies and wavelength, it is achievable. It gives the presenter the impression that the speakers are overhead or on top of him which is the norm for FOH design. As the distance between the speakers and the presenter is negligible, there is no sound delay and it gives the audience the impression that sound is coming “through” the presenter or speaking directly to them due to the sound being steered towards the audience directly. For the presenter it is like having an indirect overhead monitor.”

David adds, “We managed the challenge of feedback with the speakers’ acoustic centre tuned precisely. We demonstrated and convinced those involved by pointing a working microphone directly at the front of the speaker, with no feedback.”

Space constraint was the reason the speakers are not in a typical FOH design. Thus the challenge would also be on coverage. David explains, “As for the sound coverage in a tiered seating arrangement, the latest Fohhn Audio Software allows one to check on the SPL and coverage in side elevation and to see the SPL from the first row to the last row based on the distance measured on site. The software also allows the engineer to draw an elevated listening plane on the software during programming to check how is the SPL and coverage. The two beams technology allowed us to adjust the SPL to have a ± 3 dB between the first and last row, which is almost indiscernible to the human ear.

Though it is easier said than done, it will take years of experience and practice to understand and configure the sound that is of high intelligibility and yet gives High Fidelity ambience for musical

productions. The Fohhn Linea Focus speakers also allow the engineer to turn off the side lobes in a badly reverberating room or a room with very bad acoustics to reduce all possible reflections from the environment or turn it on for ambience enhancement to give a little bit of reverb to make the room more lively. These were some of the measures we took to meet the challenge of the space.”

System Integrator’s experience



(L-R), David Seow of CLS, Kyrman Bin Badrun of Juru&Teras Bersekutu, Prof Dr Ray Gordon and Nguyen Truong Giang and Nguyen Duc Long from Hoang Minh Intech Joint Stock Company

For Hoang Minh Intech Joint Stock Company, it was a steep learning curve especially when it came to the Fohhn steerable array and programming. “We are glad that we had the opportunity to work on

this project and though it has been a steep learning curve for us, we treasure what we have learned. We are confident what we have learned will come in handy in our future projects,” said Truong Giang.

“There were also other challenges such as delivering quality within the tight schedule and communicating with all the different contractors so that we are on top of the job. In the end, it was a satisfying job for us.”

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