



# HIGH SCHOOL INSTALLATION IN SOUTH WESTERN SYDNEY

## BACKGROUND

With Sydney's population set to hit 6 million by 2036, the population growth in the western and south-western suburbs of Sydney is amongst the highest in Australia.

This continued high growth naturally places pressure on existing infrastructure, including schools. For example, a high school in this region that originally opened in 1958 now receives an average of 1400 enrolments annually.

However this growth in student enrolments had outstripped the development of the school's facilities until a multi-million dollar upgrade program began in 2010.

This program has since seen the

construction of a new building including 10 classrooms, the refurbishment of classrooms for science, visual arts and intensive English, and a new school administration block.

This new administration block replaces the previous outdated administration building that lacked modern facilities such as air conditioning. The new building features dedicated offices for senior staff, interview meeting rooms and a general reception area for students.

Charged with the task of delivering a comfortable indoor environment in the new building, Donnelley Constructions and HVAC Systems were engaged to design and install an air conditioning system for the building, as well as install new wall-mounted split systems in another building.

## CHALLENGES

Research has shown that the indoor environmental quality of an educational facility plays an important role in the productivity and learning ability of students.


**SITE**  
HIGH SCHOOL SOUTH  
WESTERN SYDNEY

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**CLIENT/PROJECT MANAGER**  
DEPARTMENT OF EDUCATION  
& TRAINING

.....

**PROJECT TIMELINE**  
SEPT 2014 - JAN 2015



**“FUJITSU’S ABILITY TO PROVIDE A PRODUCT SOLUTION THAT MET THE KEY REQUIREMENTS OF EASY CONTROL, PERFORMANCE AND AFFORDABILITY WAS AN IMPORTANT FACTOR IN THEIR SELECTION BY HVAC SYSTEMS”.**

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## CHALLENGES (CONT)

Higher airflow rates and cooler temperatures have been shown to improve learning and information retention, and this is particularly important through the summer and early autumn months in western Sydney when temperatures are at their highest.

During summer, temperatures in this region average around 28°C with the average minimum temperature around 18°C.

Without an effective air conditioning system for classrooms and learning spaces, high internal temperatures can have a negative effect on a student's ability to focus and retain information.

Educational facilities also require HVAC systems that are simple to operate, and in this case it was also imperative that the controller be centrally located to effectively manage temperature control and distribution of conditioned air to spaces as required.

This energy efficiency measure also ensures that air conditioning is switched off when rooms are not in use, which

in turn reduces system load and energy costs.

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## RESOLUTION

To meet these requirements, HVAC Systems selected three Fujitsu General Airstage V-II Series variable refrigerant flow (VRF) systems with a combined capacity of 89.8kW.

These were teamed with seven indoor cassettes, three high-static and three medium-static pressure duct units, and two slim duct units.

Fujitsu's ability to provide a product solution that met the key requirements of easy control, performance and affordability was an important factor in their selection by HVAC Systems.

The Airstage V-II Series system features a smart, cutting-edge design that offers excellent energy savings via its heat pump type inverter control. A high Energy Efficiency Ratio (EER) is realised due to the unique, 4-face heat exchanger structure and a highly efficient DC twin compressor that substantially increases refrigerant intake while delivering

compression efficiency.

The high static pressure design flexibility offered by this system also allows the three outdoor units to comfortably service fifteen indoor units across the building.

Although a number of these were located on the furthest side of the building from the outdoor heat pumps, Donnelley Constructions was able to overcome this challenge due to the system's ability to accommodate long pipe runs.

In addition to the system serving the new administration building, two Fujitsu 5kW wall-mounted split system units were selected and installed to provide air conditioning in a separate building.

While these systems were able to fully satisfy the requirements of the brief, HVAC Systems said this project was made easy by the on-time delivery of equipment in good condition, and the technical support offered by Fujitsu to ensure the solution operates at optimum levels.

**“THE AIR CONDITIONING SYSTEMS HAVE SINCE OPERATED AS DESIGNED TO OPTIMUM LEVELS, AND WILL CONTINUE TO CONTRIBUTE TO A MODERN LEARNING ENVIRONMENT THAT IS SURE TO BENEFIT STUDENTS FOR MANY YEARS TO COME”.**

## **OPTIMAL OUTCOMES**

In selecting a reputable brand that offered a strong service solution, the end-to-end customer service experience was valued by both HVAC Systems and Donnelley Constructions on this project.

Construction of the new administration building completed in early 2015 ahead of the start of the school year, and was officially opened by government dignitaries in June 2015.

The air conditioning systems have since operated as designed to optimum levels, and will continue to contribute to a modern learning environment that is sure to benefit students for many years to come.

<b>COMPLETION DATE:</b> JANUARY 2015 .....	<b>PRODUCTS</b> 8 INDOOR CASSETTES 3 HIGH STATIC DUCTED UNITS 3 MID STATIC DUCTED UNITS 1 SLIM DUCT UNITS 2 WALL MOUNTED SPLIT SYSTEMS 3 V-II SERIES HEAT PUMPS 16 CONTROLLERS	<b>QUANTITY OF OUTDOOR UNITS:</b> 3 .....
<b>APPLICATION:</b> EDUCATION .....		<b>QUANTITY OF INDOOR UNITS:</b> 17 .....
<b>INSTALLER/CONTRACTOR:</b> HVAC SYSTEMS .....		<b>TOTAL SYSTEM CAPACITY:</b> 89.8KW VRF AND 10KW SPLIT SYSTEMS
<b>MECHANICAL SERVICES CONTRACTOR:</b> HVAC SYSTEMS		