REHAU GROUND-AIR HEAT EXCHANGER
BANFF & BUCHAN COLLEGE, FRASERBURGH, SCOTLAND
The largest AWADUKT Thermo ground-air heat exchanger system ever installed in Scotland can now be seen at the newly refurbished and extended Banff and Buchan College in Fraserburgh. The benefits of the passive cooling capability were a significant factor in it being chosen to provide a healthy and comfortable learning environment.

The REHAU system draws air from outside at a rate of 16000m³/hr through a 42m x 30m grid of REHAU AWADUKT Thermo polypropylene pipework, 1.5m below the playing fields of the college. This allows optimal heat transfer to take place between the ground and the air so resulting in the air being warmed by up to 9°C in winter and cooled by as much as 14°C in summer by the time it reaches the air handling unit (AHU).

This will have a significant impact on the energy loading of the AHU and will eliminate the requirement for refrigerant based mechanical cooling to counter the heat gain in the building generated by high occupancy levels and large amounts of glazing, particularly in the atrium.

Senior Mechanical Engineer, Alan Gibb from KJ Tait Engineers specified the system in response to requests from the client for an energy efficient heating and ventilation system to assist with their aspirations to successfully secure a ‘very good’ BREEAM rating.

Alan said: “On a sunny summer day when the external ambient temperature could be as high as 25°C, the system will deliver air to cool the atrium which has been pre-cooled by the ground-air heat exchanger to around 10-11°C using minimal amounts of energy and with almost zero running costs. For a building which has no mechanical cooling, this will be hugely rewarding.

“In a learning environment where the requirement for ventilation is increasingly being recognised, the REHAU AWADUKT Thermo system is a very effective solution.”

The installation was carried out by mechanical contractors Sparks Mechanical Services with support from REHAU’s technical team at its Glasgow sales office. The pipework grid comprises 60m of 1050mm diameter socketed header pipe and 1680m of 250mm heat transfer pipe with a 70m run header pipe transferring air into the building.

KJ Tait will be monitoring the temperature of the air entering the air handling unit via BMS readings as it evaluates the performance and payback of the REHAU AWADUKT Thermo system over its first year in operation.

The Banff and Buchan FE college refurbishment and extension is being carried out by Robertson Construction Northern Ltd and is expected to be completed at the end of 2011.