GROUND-AIR HEAT EXCHANGER SYSTEM
WEMBLEY MANOR SCHOOL, LONDON
M&E consultants Max Fordham LLP specified the REHAU AWADUKT Thermo ground – air heat exchanger for the new £10m Wembley Manor Primary School in the London Borough of Brent.

The school was designed by architects Walters & Cohen to allow for natural lighting and ventilation wherever possible both to reduce energy costs and to create a comfortable environment for the pupils.

AWADUKT Thermo proved the ideal renewable energy solution since it uses the natural temperature of the earth to pre-warm or pre-cool ventilation air as it is drawn through a network of underground pipes before it enters a building, reducing both heating and cooling costs.

At Wembley Manor, the AWADUKT Thermo polypropylene pipework grid has been laid under what will eventually be a school sports pitch and is delivering quiet, controlled ventilation into the 450m² ‘hub’ of the school where the pupils will meet for assembly and for shared activities.

Max Fordham LLP worked closely with REHAU, experts in sustainable polymer technology, to design a double stacked grid which saved 30% on the space required for the 20 x 18m lengths of 200mm diameter heat transfer pipe and the 800mm pre-fabricated header pipe system.

The lowest layer of pipework was installed at a depth of 1.8m and then the ground was back filled before the second layer of pipework was laid at 1.5m. It is at this depth that the earth’s temperature is a constant 8-12°C and where heat transfer between the earth and the air can be maximised via the optimised polypropylene pipework material.

Using REHAU AWADUKT Thermo, it is possible to increase the temperature of the air drawn through the pipes by up to 9°C in winter and reduce by as much as 14°C in summer, minimising the loads for the heating and cooling system in place and reducing the capital and running costs of the other HVAC equipment.

An air inlet tower in the school grounds draws air through the pipework via an electrical fan and delivers it into the building through floor displacement grilles. An antimicrobial layer inside the pipework made of silver particles prevents microbial growth which could cause musty smells and a bespoke airtight condensation collection chamber ensures there is no risk of condensate build up.

With 900 pupils and a four form intake, Wembley Manor is one of the largest primary schools in England and has been built under the terms of the DfES Building Schools for the Future (BSF) programme. The main contractors are Norwest Holst and the civil engineering contractors are Harringtons.

REHAU AWADUKT Thermo is being installed on some of the UK’s most high profile BSF projects, including the Queen Elizabeth’s School in Wimborne, Dorset where a total of 3,500m of pipework is being installed as part of largest ever installation of the system.