



**REHAU**<sup>®</sup>

Unlimited Polymer Solutions



## REHAU AND EDUCATION

ENERGY EFFICIENT BUILDING SOLUTIONS THROUGH INNOVATION





## **Innovation**

REHAU are a global manufacturer of energy efficient building solutions. We bring innovative ideas from around the world to illustrate how schools and colleges can comply with the latest building regulations and sustainability codes while, at the same time, minimising costs.

Best known in the UK for the manufacture of windows and curtain walling systems, REHAU offers renewable energy solutions such as ground source energy. We also provide underfloor heating and cooling systems, district heating, plumbing and data cable management systems. REHAU's comprehensive range is ideal for fast, efficient and cost-effective installation in schools, colleges and other education sector buildings.

Formed in 1948, REHAU prides itself on its technical expertise and is currently investing substantial resource on research and development for innovative solutions for the education sector. The company's outstanding reputation in this market has been built not only on the quality of its products but also on the value of the service and technical advice we have provided to school construction projects for over 30 years.

Along with three UK manufacturing plants, REHAU has a Head Office in Ross-on-Wye and regional offices in Slough, Manchester, Glasgow and Dublin. We are also supported by a Specification Centre in the London Building Centre. Through the REHAU Academy, staff and Authorised Partners are trained to give full support to clients, specifiers and contractors involved in the Building Schools for the Future programme. A truly global business, REHAU operates from 170 locations worldwide with more than 15,000 employees.

# REHAU AND EDUCATION

## CHALLENGES AND SOLUTIONS

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### REHAU AND EDUCATION

One of today's major challenges is our collective fight against global warming. We can do this by reducing our CO<sup>2</sup> emissions and changing to a more sustainable way of living. Education buildings are at the forefront of demonstrating what can be achieved. The Building Schools for the Future programme, and, in particular, their Pathfinder Projects are already actively stepping up to this challenge by providing exemplary guidance for the building of hundreds of more energy efficient school buildings.

REHAU has established itself as a building solutions provider with the focus on energy efficiency and sustainable solutions, meeting and exceeding the requirements of modern education buildings.

There are three pillars of energy efficiency which form the basis of the system solutions and design support we offer:

### REDUCE ENERGY LOSSES

We can reduce energy loss through thermally-enhanced building fabric. Our window and curtain walling solutions play a significant part in providing thermal insulation values meeting Passive House Standard, with U<sub>w</sub>-Values of 0.8 W/m<sup>2</sup>K. These low U-Values allow extended glazed areas which increase the use of daylight, another major factor of energy reduction.

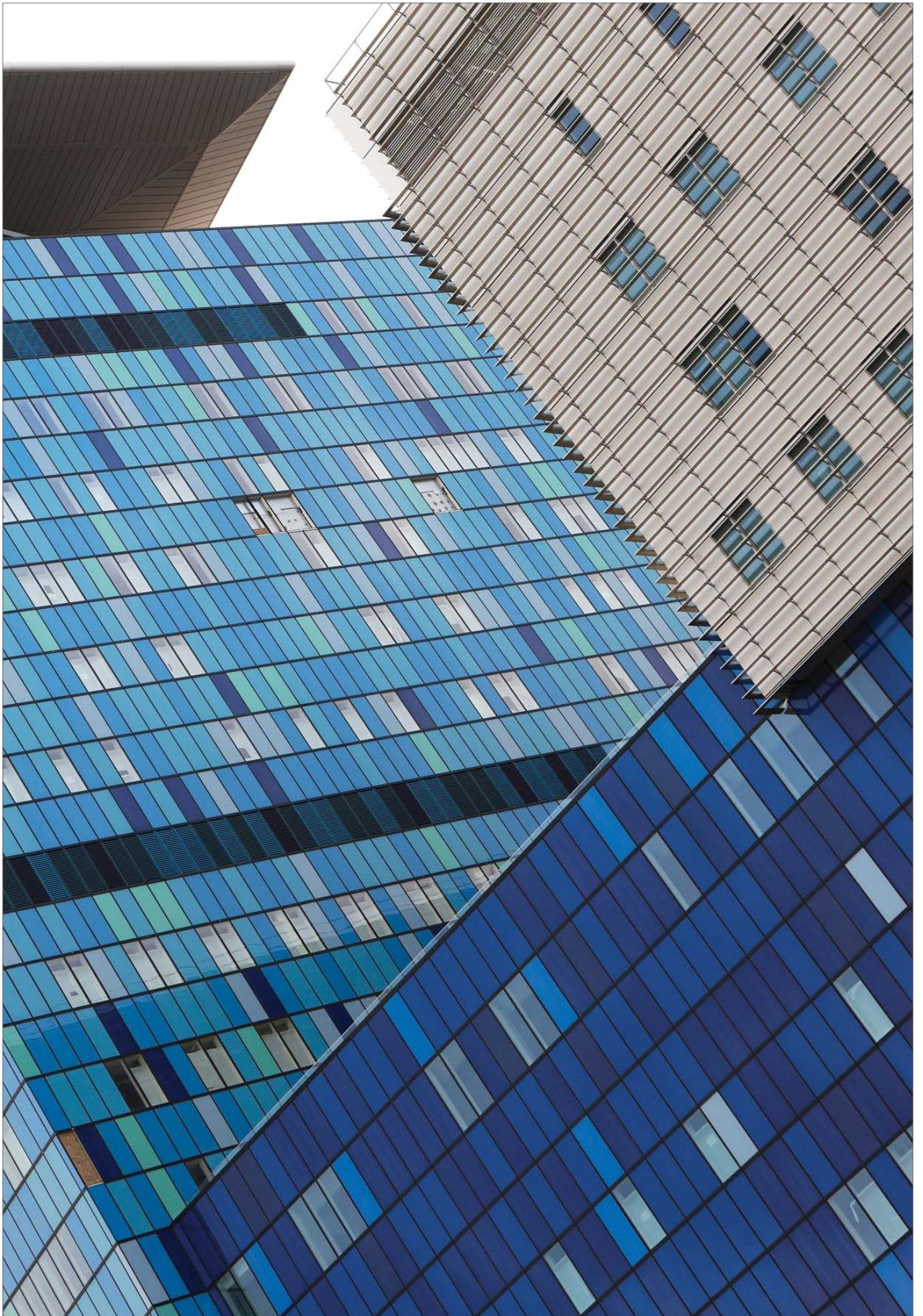
### DISTRIBUTE ENERGY EFFICIENTLY

REHAU's water-based surface heating and cooling solutions allow you to distribute energy efficiently. All our solutions (from underfloor heating, wall or ceiling heating up to concrete core tempering) can be used for cooling, guarding against ever increasing internal loads (solar gain, ICT loads) and the effects of global warming. The benefits of using REHAU solutions are not just based around energy efficiency - increased air temperatures above 26°C inside the class room have been proven to have a negative effect on pupils' performance levels. Low carbon cooling solutions are a must in every new or refurbished education building for both energy and student efficiency.

### GENERATE ENERGY EFFICIENTLY

Water-based surface heating and cooling solutions are ideally combined with heat pumps to reduce energy and running costs as well as CO<sup>2</sup> emissions. By using ground source solutions the opportunity for passive cooling provides the best solution to future proof the building. A mechanical ventilation strategy provides a necessary fresh air supply through the use of a Ground-Air Heat Exchanger (GAHE). The GAHE pre-warms the air in winter and most importantly pre-cools the air in summer, providing a low carbon cooling solution, one of the major challenges faced by our school building designs.





# REHAU ENERGY EFFICIENT BUILDING SOLUTIONS

## YOUR INNOVATIVE CONSTRUCTION PARTNER

### Our products

REHAU's expertise is in developing solutions in polymer. Polymer outperforms materials traditionally used in schools, delivers improved thermal and environmental efficiencies as well as providing outstanding quality and performance levels. From ground source renewable energy systems to innovative cable management solutions, REHAU offers products and systems which are proven in the education sector.

#### 1 REHAU Curtain Walling

The thermal characteristics of the REHAU Polytec 50S composite curtain walling system make it the ideal solution for educational buildings, for both new-build and refurbishment.

#### 2 REHAU Window Systems

Thermally-efficient windows with Passive House Standard  $U_w$ -Values of  $0.8 \text{ W/m}^2\text{K}$  increase glazed areas and therefore maximise the use of natural daylight. These are A-rated by the BRE Green Guide.

#### 3 REHAU Underfloor Heating/Cooling

The REHAU underfloor heating/cooling systems are providing cost-effective comfort and safety in a variety of installations in the education sector. Wherever you install it, the system you choose can be tailored to suit the space and its occupants. REHAU underfloor heating provides the right amount of heat in the right place at the right time and most importantly can also be used for cooling to future proof the building.

#### 4 REHAU Cable Management

REHAU have a full range of trunking and cable management products for the education sector including the COMPACT data 140 x 50mm trunking system and the PROFILA data 180 x 65mm sister system. Both are stylish and designed for the fast and simple installation of power and the latest

data cables. They incorporate features such as flexible corners with gentle-bend radii ensuring that maximum data cabling performance is retained. The systems can be joined together using an adapter which allows different sized trunking to be used in a building with the same aesthetics. REHAU's new bench trunking range is suitable for use in science laboratories and other classrooms.

#### 5 REHAU Heating & Plumbing

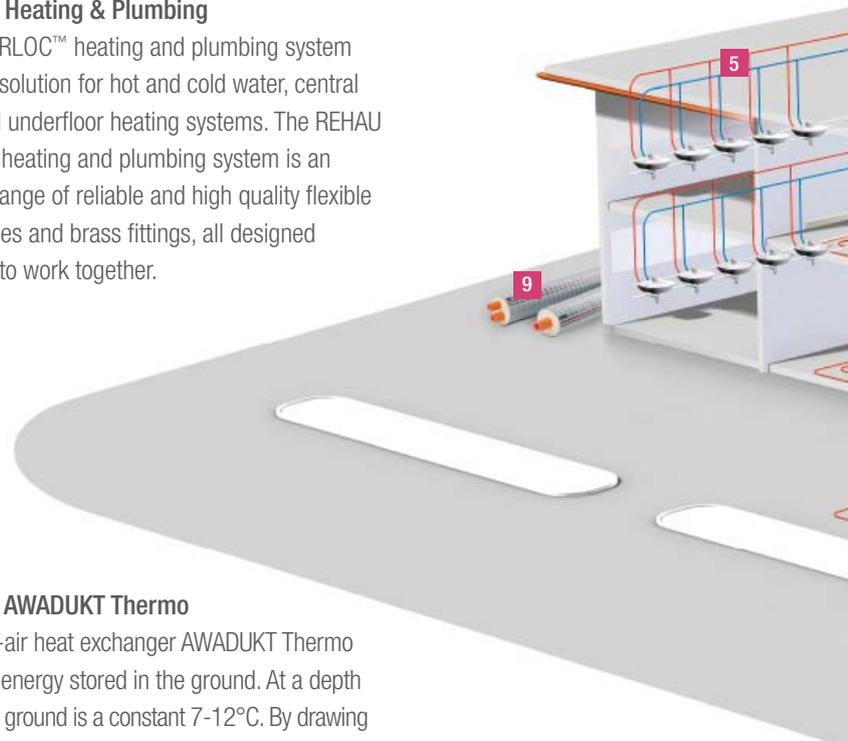
REHAU EVERLOC™ heating and plumbing system is the ideal solution for hot and cold water, central heating and underfloor heating systems. The REHAU EVERLOC™ heating and plumbing system is an integrated range of reliable and high quality flexible polymer pipes and brass fittings, all designed specifically to work together.

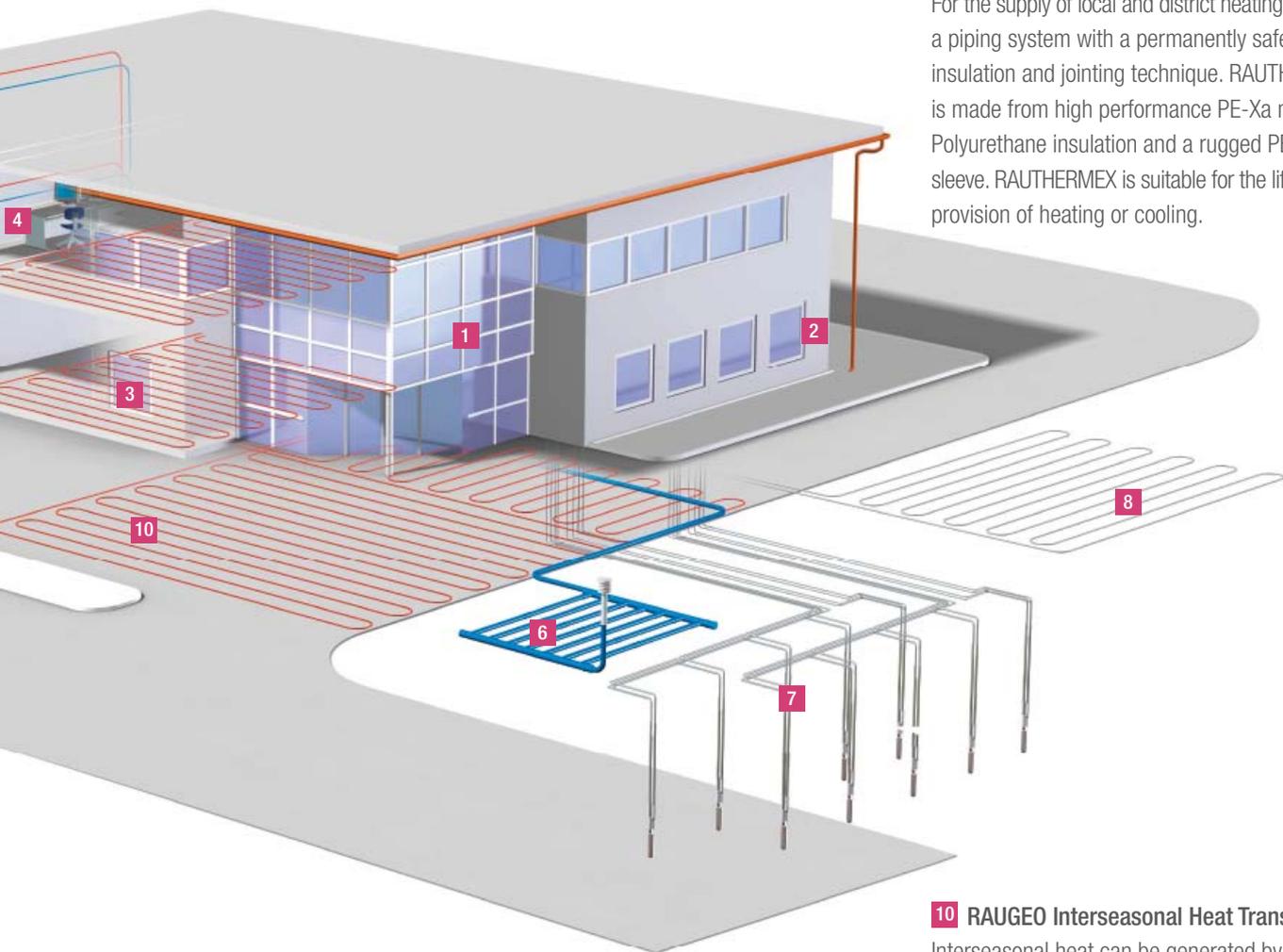
#### 6 REHAU AWADUKT Thermo

The ground-air heat exchanger AWADUKT Thermo exploits the energy stored in the ground. At a depth of 1.5m, the ground is a constant  $7-12^\circ\text{C}$ . By drawing air through an underground network of pipes, it provides a source of heating and cooling for a building.

#### 7 RAUGEO Probe

Energy is extracted from the ground through a closed circuit. The water and anti-freeze mixture circulating in the RAUGEO probe serves as a heating and cooling source. With the help of a heat pump, the extracted heat is raised to the temperature needed for heating. The RAUGEO probes can also then be used for passive cooling.





#### **8 RAUGEO Collector**

Energy is extracted from the surface through a closed circuit approximately 1.5m deep where the ground temperature is 7-12°C. The water and anti-freeze mixture, which circulates in the RAUGEO pipes, serves as a heating or cooling source.

#### **9 RAUTHERMEX**

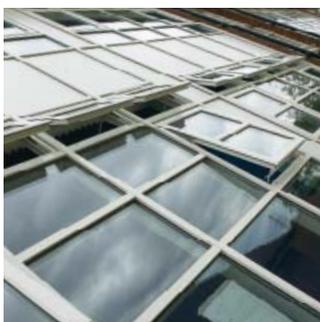
For the supply of local and district heating you need a piping system with a permanently safe thermal insulation and jointing technique. RAUTHERMEX is made from high performance PE-Xa material, Polyurethane insulation and a rugged PE outer sleeve. RAUTHERMEX is suitable for the life-long provision of heating or cooling.

#### **10 RAUGEO Interseasonal Heat Transfer**

Interseasonal heat can be generated by capturing the temperature levels in the sealed surfaces of parking spaces or playground areas and transferring it into heat stores like RAUGEO probes.

# ENERGY REDUCTION SUCCESS STORIES

## REHAU CURTAIN WALLING POLYTEC 50S



REHAU Polytec 50S is a composite curtain walling system which combines the structural capabilities of steel reinforcement with the design and finish of aluminium on the exterior and the warmth and low maintenance benefits of PVC on the interior.

The thermal characteristics of the system make it the ideal solution for educational buildings. Thermal insulation of up to Passive House Standard of  $U_w = 0.8$  W/m<sup>2</sup>K can be reached. It minimises energy losses through the building fabric and has the added benefit that it is warm to the touch on the internal face so creates a comfortable environment for staff and students.

This outstanding thermal performance enables the use of increased glazed areas to maximise natural daylight, another contributor to reduce energy consumption.

### **St Margaret of Scotland Junior School, Luton.**

Refurbishment project to thermally enhance the building fabric by replacing the existing aluminium systems with Polytec 50S.

**Above:** New build education building with extremely low energy consumption, thanks to the perfectly insulated building fabric.

# ENERGY REDUCTION SUCCESS STORIES

## REHAU WINDOWS



REHAU's range of PVC-U window and door systems offer a practical and cost effective route to improving the energy performance of both new build and refurbished educational buildings. Thermal insulation up to Passive House Standard with the values of  $0.8_{\text{W}}/\text{m}^2\text{K}$  can be reached.

Again, the use of increased glazed areas to maximise natural daylight is another contributor to reducing energy consumption. It is therefore not surprising that REHAU's commercial window offering is rated with an A+ in the latest BRE green guide.

With a nationwide network of both fabricators and installers and a highly trained in-house sales team, REHAU can provide a complete service to both the state and independent sectors.

### **Bury Grammar School for Boys and Kindergarten.**

Installation of S706 70mm windows in a refurbished original building and throughout new build Kindergarten.





# ENERGY DISTRIBUTION SUCCESS STORIES

## REHAU UNDERFLOOR HEATING/COOLING

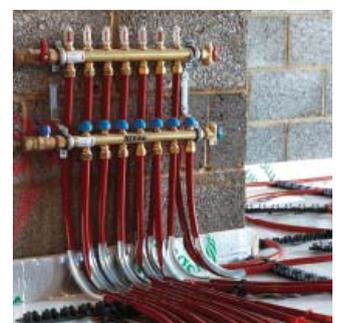


REHAU underfloor heating systems are providing practical, cost-effective comfort and safety in a variety of ways in schools across the UK. Wherever you install it, the system you choose is tailored to suit the space and its occupants.

REHAU underfloor heating provides the right amount of heat in the right place at the right time. In summer it can also be used for cooling.

At Headington School, Oxford, REHAU underfloor heating was installed on battens under an acoustic floor, a solution specifically designed for timber floors. The REHAU aluminium diffusion plate system gives a level surface for the floor and delivers even and consistent warmth across the whole floor area.

The Orchard Building at Stranmillis University College, Belfast, features REHAU's underfloor heating system and plumbing pipework throughout. Our underfloor heating was chosen as the preferred solution for the building because of its low flow and return temperatures. Using this system in combination with the RAUGEO ground source solutions means that low carbon cooling like 'passive cooling' can be achieved.



# ENERGY DISTRIBUTION SUCCESS STORIES

## REHAU CABLE MANAGEMENT



**REHAU cable management systems** continually prove to be the most cost-effective product of choice for the education market. Offering a full range of products, the PROFILA 180 x 65mm and COMPACT 140 x 50mm data trunking systems have been successfully installed in many schools, colleges and university buildings. Both products feature flexible corners which help speed up installation. Internal corner guides ensure data cables are treated gently to help retain maximum performance. Both systems can contain an impressive number of cables for their size. Together with a new variable depth socket box, REHAU ensures fast installation while meeting cabling manufacturers exacting installation requirements.

REHAU's new bench trunking range includes traditional bench trunking on top of working surfaces in science laboratories, standalone

and pre-assembled pod units, four sided columns and bench trunking forming pillars against walls. This is a truly flexible cable management system you can work with to meet your specific requirements.

Over 9000m of REHAU's PROFILA data has been installed at Burnley College, allowing the college to incorporate both wireless and hard wired networks designed to give students and staff continual access to IT resources throughout the building. At Suffolk New College 4000m of trunking has been installed as well as coloured lids, which satisfy the requirements of Part M of the Building Regulations relating to use by the visually impaired.

Other installations include Manchester and Slough Building Schools for the Future, Penn Wood School and many more.

# ENERGY DISTRIBUTION SUCCESS STORIES

## REHAU HEATING & PLUMBING SYSTEMS



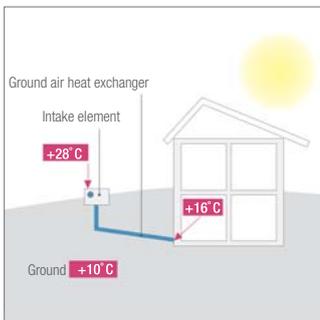
Recognised for both quality and high performance, the REHAU EVERLOC™ heating and plumbing system is the ideal solution for hot and cold water, central heating and underfloor heating systems. The system combines the advantages of high technology polymer materials with the benefits of an integrated range of pipe and fittings. Removing the need for traditional copper pipework and fixings, REHAU flexible heating and plumbing pipework has been proven to save time, money and effort. REHAU RAUTHERMEX also uses the same jointing technique.

The refurbished student development at Tufnell Park, North London has REHAU polymer pipework installed, comprising of 110mm RAUTHERMEX pre-insulated district heating pipework bringing hot water underground from the plant room to the new building, as well as REHAU polymer pipework for the hot and cold water supply throughout the building. REHAU pipework was connected directly to the pre-plumbed bathroom pods, ensuring that the jointing process is quick and straightforward.



# ENERGY GENERATION SUCCESS STORIES

## GROUND-AIR HEAT EXCHANGER



The **REHAU AWADUKT Thermo**, ground-air heat exchanger is proving to be a key environmental component in the education sector. AWADUKT Thermo is the ideal renewable energy solution, making use of the natural temperature of the earth to pre-warm or pre-cool ventilation air. It is drawn through a network of underground pipes before it enters a building, reducing both heating and cooling costs. With increasing insulation and air tightness levels, the need for a low-energy cooling solution in schools is growing.

At Wembley Manor, the AWADUKT Thermo polypropylene pipework grids have been laid under the school sports pitch, and are delivering quiet, controlled ventilation into the 450m<sup>2</sup> 'hub' of the school where the pupils meet for assemblies and other shared activities.

At TreeHouses' newly built Pears National Centre for Autism Education, the AWADUKT Thermo is installed via three grids delivering air flow rates that are predicted to deliver a minimum of 10% of the building's energy requirement – equivalent to a carbon saving of 1056kg/year.

**Other installations include:** Nairn Academy, Scotland, Queen Elizabeth School, Dorset, Tuke School, London and Joseph Rowntree York, all demonstrating that AWADUKT Thermo is the right choice.

# ENERGY GENERATION SUCCESS STORIES

## GROUND SOURCE SOLUTIONS



**Ground source energy** is one of the most commonly exploited renewable energy sources. By using a ground source heat pump (GSHP), this energy can be harvested to make significant heating and cooling savings for an education project. The ground temperature is kept between 7-12°C at 1.5m deep throughout the year which makes it an ideal energy source. GSHPs have an efficiency of around 3-4, which means that for every 1 unit of energy used, around 3-4 units are produced. Ground source heat pumps are ideally linked up with underfloor heating to provide a complete energy-efficient heating and cooling solution. To further improve the efficiency, the ground-source system can be used for passive cooling.

The RAUGEO range has the complete solution for any ground source project, with pipe and accessories for vertical boreholes, horizontal collectors and energy piles. REHAU work with their Authorised Partner network to offer clients and contractors a complete ground source solution.

The patented RAUGEO PE-Xa probe offers the highest reliability and reassurance for the client. Use of cross-linked polyethylene (PE-Xa) removes the need for a joint at the probe tip resulting in no potential leakage. REHAU are the only supplier to offer a full 10-year consequential loss warranty of every PE-Xa probe installed.

RAUGEO PE-Xa probes are also double-U loop probes (2 flow and 2 return pipes) which give built-in redundancy and extra thermal performance.



# ENERGY GENERATION SUCCESS STORIES

## PRE-INSULATED PIPE FOR REMOTE ENERGY CENTRES



There is a growing trend in education buildings for remote energy centres, often using renewable heat sources such as ground-source, biomass or combined heat and power (CHP) plants.

These offer an efficient heating solution but they are situated away from the main school buildings.

In locating the energy centre separate from the main buildings, it is important to ensure that minimal heat is lost between the energy centre and the building. Low-quality insulation techniques can significantly decrease the efficiency of the whole system.

RAUTHERMEX PE-Xa pre-insulated pipe offers the excellent thermal insulation and temperature resistance up to 95°C. Using the leak-proof EVERLOC™ fitting range and foam-insulated shrouds ensures the highest quality of pipe connections.

RAUTHERMEX is available in both UNO (single pipe) and DUO (twin pipe) versions from sizes 25mm-160mm (DUO to 63mm) and offer custom pipe lengths. The closed cell foam insulation means that there is no need to take thermal expansion into account.

Specifiers and contractors in the education sector are increasingly using RAUTHERMEX because of its speed and ease of installation, coupled with low heat losses offered. REHAU can assist with design and pipe sizing for any size of project.

# SUCCESS STORIES

## OTHER COMMERCIAL APPLICATIONS

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REHAU also have proven experience and excellent understanding of other commercial applications, from shopping centres to hotels to airports.

REHAU cable management has been recently installed at St Barts Hospital and the London Hospital.

REHAU slim-line trunking has been installed in bathrooms at the Ramada Hotel, Manchester. Heating and plumbing has been installed at The Usher Hall and underfloor cooling installed at a new snow dome near Hemel Hempstead.

REHAU POLYTEC 50S curtain walling is now in place in the new Butlins hotel in Bognor Regis, a care home in Slough and at a Cricket Club in Lancashire.

**Whatever the project, REHAU has a solution.**





# REHAU SUPPORT

## WHY CHOOSE REHAU



REHAU offers a vast range of support services to make the specification, installation and operation of our products as positive and straightforward as possible.

This includes everything from a showroom at the London Building Centre, where specifiers can get hands-on with our products, to assisting with system design and CAD services, to advising on estimated energy saving calculations and pipe sizing at our regional Sales Offices in Slough, Manchester, Glasgow and Dublin.



We help with product offering, and working on bespoke solutions for individual requests. Our highly trained technical team will find the right solution for you.

### Product Testing and Approvals

Cable Management Systems, BSI tested and approved.

### Underfloor Heating & Plumbing Systems

REHAU pipe is manufactured in accordance to BS7921. The pipe and fittings are WRAS approved. The REHAU underfloor heating system (excluding controls) is BBA approved.

### AWADUKT Thermo Pipe

The REHAU pipe is manufactured in accordance with BS7921. The antimicrobial property of the inner pipe surface has been tested and verified by Institut Fresenius at Taunusstein, to ASTM Standard E2180.

### REHAU Windows & Curtain Walling

The manufacturing process complies with ISO 14001 for environmental standards. It is kite-marked to BS EN 12608 which incorporates EN ISO 9001. BBA approved and type tested to BS7959 & PAS 23/24 security standards.

### REHAU Training

The REHAU Academy offers training courses for all our products, ranging from one-day introduction courses, to two-day installation and design courses. Our Academy is based at our Head Office in Ross-on-Wye. We also offer academy training at our regional Sales Offices, or if required, on site at customer premises.

### REHAU Authorised Partners

REHAU supplies its products through an established network of Authorised Partners who operate on our behalf across the UK and Ireland.

These partners have been on all required academy training courses and are authorised by REHAU to carry out installation of our products and systems. All of our partners are supported by REHAU's Sales and Technical Teams based at our Head Office and Sales Office.

A full list of Authorised Partners can be found on our website [www.rehau.co.uk](http://www.rehau.co.uk)



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#### **UK & IRELAND SALES OFFICES**

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