GF Piping Systems

IR PVC-U

Infrared welded PVC-U for the world's largest ceramic membrane water treatment plant



Ross-shire Engineering (RSE) selected a complete solution by GF Piping Systems to provide South Staffordshire Water with long-lasting chemical dosing systems.

Longevity, efficiency, and cost-effectiveness thanks to innovative infrared welding

Ceramic membranes are an effective way to eliminate impurities such as bacteria, sediment, and turbidity. Compared to other treatment methods, membrane treatment plants are often more compact and energy-efficient while meeting stringent guidelines and ensuring a consistent water quality. When RSE was tasked with constructing six new complete chemical dosing systems as part of their latest ceramic membrane water treatment plant, the UK company selected an infrared welded PVC-U solution by GF Piping Systems.

Project background

The utility company South Staffordshire Water is currently building what will become the world's largest ceramic membrane treatment plant at Hampton Loade Water Treatment Works near Birmingham (UK). In order to process the 210 000 cubic meters of water each day and filter the incoming raw water, the plant relies on a chemical dosing system. The chemicals are necessary for processes such as pH correction, chlorine neutralization, and disinfection. During the off-site construction of the dosing skids, water treatment specialist RSE required a piping system that combined a long and cost-effective service-life with an efficient installation.

Selected technical solution

Infrared welded PVC-U is a new development by GF Piping Systems for chemical processing and water treatment applications. It combines the proven benefits of PVC-U as a material with modern infrared welding machines. Due to a machine-controlled process, variables such as temperatures, jointing times, and cooling periods are consistent and repeatable. The welding machines are also capable of detecting any deviations from the defined parameters, while a printer provides labels for full traceability. GF's IR PVC-U system features up to 20% bio-based materials and offers chemical as well as corrosion-resistance in temperature ranges between 0°C and 60°C.

Achieved improvements

As a result of selecting infrared welded PVC-U, RSE was able to save installation time during the construction of every dosing skid. IR PVC-U eliminates the curing periods associated with cemented pipe joints, and it can be immediately pressure-tested after the last weld has been completed. Compared to adhesive, which requires hydrocarbons from the solvent to be removed, the flushing process of IR PVC-U is also much shorter. GF has been supplying the ongoing project with training, support, and a wide range of piping materials and components. When the chemical dosing skids are put into operation, South Staffordshire Water will benefit from flow solutions that are resistant against harsh chemicals such as 96% sulfuric acid, hydrogen peroxide and hydrochloric acid used in the water treatment process, and have low maintenance requirements throughout their service life.



GF Piping Systems' digital libraries and comprehensive project support helped to execute the project on time.
Source: GF Piping Systems



IR PVC-U combines the strengths of PVC-U with modern welding machines that ensure consistent, safe, and reliable pipe connections.
Source: GF Piping Systems

Customer Benefits

- **Reduced installation time eliminating curing periods and enabling immediate pressure testing**
- **High chemical resistance, i.e. for 96% sulfuric acid, ensuring the reliability of the water treatment process**
- **Consistent and reproducable joints, reducing the risk of errors**
- **Low maintenance throughout the system's service life, reducing long-term operational costs and efforts**
- **Complete project support to customers, including planning, engineering, and on-site training**

Where next?

Watch the video

Visit our webpage to get in touch with your local specialist:
www.gfps.com/our-locations

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