



Polymer Composites as Construction Materials

Application Summary Sheet 29

Title: Piping and Sewerage Treatment Plant

Target Audience: Structural Engineers, Utility Companies, Suppliers, Composite Manufacturers, Construction Contractors

Keywords: Durability, Lightweight, Polymer composites, Piping, Waste water treatment

Overview of application / summary:

Applications of composite piping are increasing. They are particularly advantageous in corrosive, hostile or aqueous environments where their inherent properties offer substantial engineering and financial benefits. Lower through-life costs are realised from extended design lives and reduced maintenance requirements. In America, about \$20 billion is spent annually in combating corrosion damage to conventional piping. The cost of manufacturing and erecting offshore oilrigs could be cut significantly if heavy metal pipelines were replaced with composite pipelines.

FRP pipes are lighter than conventional steel products, meaning transportation and installation is easier, cheaper and safer. They can operate at higher working pressures due to their superior strength to weight ratios and good fatigue performance means that they can also withstand severe thermal cycling, both at high and low temperatures. They do not leach toxic preservatives into the earth or marine surroundings, which minimises environmental and wildlife effects.

Successful hybrid solutions have also been exhibited with this type of application. An example is the inclusion of a steel strip core encapsulated between two impervious composite jackets. The maximum operating pressure is increased and remote electrical monitoring permitted.

Impact of application

Engineering:

Financial:

Environmental:

Social

Robustness of research

Future developments

Where to get further information

Companies

Articles