Borouge RA130E PP-R based systems used in Etihad Towers Development

The background

Etihad Towers - Abu Dhabi’s latest prestigious commercial and domestic development

Set in the most desirable and exclusive beachside Al Ras Al Akhdar district of Abu Dhabi and located near the world-renowned Corniche, Etihad Towers is designed, inside and out, to give guests who live, work, shop, dine and stay the most memorable and enriching of experiences. The development covers a total area of over half a million square metres, and the tallest of the five towers reaches a height of over 300 metres. The three residential towers provide a total of 885 spectacular apartments and penthouses, ranging from one to five bedrooms. The apartments, with superb quality finishes and services have panoramic views of the city and Arabian Gulf.

The challenge

Selecting the best plumbing systems for this luxurious development

In high rise towers relatively large diameter pipes are required to deliver water to the many floors and the weight of the systems becomes a major issue during installation and operation. Metal piping systems for such buildings will require very robust anchorage and therefore the designers chose lightweight PP-R piping systems.

The solution

PP-R pipe systems chosen for internal plumbing systems

Designing, producing and installing the hot and cold water system for such a large and prestigious development is challenging and demands the highest quality of products and workmanship. The pipe systems were produced by World Plastics based in Jordan and supplied through Bani Marban International Trading of Abu Dhabi. The system was produced using RA130E PP-R polymer which is produced nearby at Borouge’s plant in Ruwais, Abu Dhabi.

World Plastics was established in 1984 and has subsequently become one of the leading companies in the region and supplies a wide range of high quality single and multi-layer pipe systems from PP-R and PEX materials. As they expected for such a large project the quantities of PP-R pipe required was considerable totalling over 45,000 metres for all sizes. Many large diameter pipes were also required to service the 60-80 floors of the five main towers. The largest size of all was 160mm diameter PP-R pipes of which approximately 5,500 metres were required.
The benefits

In addition to their light weight and flexibility which significantly aids installation, PP-R systems offer a number of other important benefits for the installer and the building owner.

A wide range of pipes and fittings are available, all of which can be joined using socket and butt fusion welding. Welding the system produces very secure joints with no rubber ring or gasket to deteriorate over time in the high temperature environment. In addition being plastic they will not corrode and have a low tendency to internal encrustation. Also being plastic they damp out any vibrations and sounds resulting in a reduction in the noise transmitted by the system.

The RA130E PP-R material is based on the well established grade from Borealis which has an exceptionally good track record. In the Borouge plant in Abu Dhabi it is produced and tested to the highest quality standards and meets all the essential national and international standards. All the monomers and additives used in the production fully comply with the regulations and in addition, testing of the organoleptic properties is carried out on a quarterly basis by the well known independent test institute Technologiezentrum Wasser (TZW) in Germany. Indeed the high purity of the feedstock in the Middle East means that the taste and odour properties of Borouge RA130E are second to none.

Summary table

<table>
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<tr>
<th>Customer Name</th>
<th>World Plastics - supplied by Bani Marban Intl. Trading</th>
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<tr>
<td>Application/Product</td>
<td>Hot and cold water system</td>
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<tr>
<td>Grade(s) Used</td>
<td>Borouge RA130E PP-R</td>
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| Functional Requirements | • Easy to install in tall tower blocks  
• Durable system with a long leak free life |
| Benefits | • Flexible  
• Welded leak free joints  
• Corrosion resistant  
• Lightweight and easy to handle  
• Reduced noise transmission  
• Low incrustation tendency  
• Noise dampening plastic material  
• Excellent long term pressure resistance  
• High Durability |

Borouge is a leading provider of innovative, value creating plastics solutions. A joint venture between the Abu Dhabi National Oil Company (ADNOC), one of the world’s major oil and gas companies, and Austria based Borealis, a leading provider of chemical and innovative plastics solutions, Borouge is a groundbreaking international partnership at the forefront of the next generation of plastics innovation. Borouge has its headquarters in the United Arab Emirates and Singapore, employs approximately 1,600 people representing more than 40 nationalities and serves customers in more than 50 countries across the Middle East, Asia Pacific, Indian sub-continent and Africa. Building on Borealis’ unique Borstar® technology and experience in polyolefins for more than 50 years, Borouge provides innovative, value creating plastics solutions for the infrastructure (pipe systems, and power and communication cables), automotive and advanced packaging markets. In 2010 Borouge tripled its annual production capacity in Abu Dhabi to 2 million tonnes and an additional 2.5 million tonnes per year will be introduced by mid-2014 to create the world’s largest integrated polyolefins plant. Borouge is also investing in plants and logistics hubs in Asia and an Innovation Centre in Abu Dhabi. Today Borouge and Borealis have a manufacturing capacity of over 5.4 million tonnes of polyethylene and polypropylene annually. Focused on Value Creation through Innovation they ensure that their customers throughout the value chain, around the world, can always rely on superior products and security of supply. Borouge is committed to the principles of Responsible Care® and together with Borealis proactively contributes towards addressing the world’s water and sanitation challenges through their Water for the World™ initiative. Visit www.borouge.com and see how we are Shaping the Future with Plastics.

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