PP-R hot and cold water system for the ADNOC Headquarters Complex in Abu Dhabi

The background

ADNOC new Headquarters – a landmark building in the United Arab Emirates

The new Abu Dhabi National Oil Company’s Headquarters is set to become a landmark building in the United Arab Emirates and a symbol of ADNOC’s status as one of the most prominent oil and gas companies in the world. In addition to office space, this magnificent tower will include a Corniche Club, the Supreme Petroleum Council and Crisis Management Centre, the Heritage Museum and other supporting facilities. The building is also expected to qualify for a Gold or Platinum Leadership in Energy and Environment (LEED) certificate from the Green Building Council because of its low impact on the environment. The new complex will comprise a 65 floor 335m high central tower podium and atrium together with underground car parking facilities. The total floor area will be approximately 190,000 square metres.

The challenge

Identifying the optimum hot and cold water system

For such a prestigious building, the challenge was to identify the most suitable material for the hot and cold water pressure system for this high rise building which should be easy to install and very reliable with a long life without any maintenance.

The solution

New high performance PP-R systems instead of metal pipe systems

After much deliberation the designers selected Beta-PPR™ pipe systems produced by Advanced Plastic Industry (API) in Lebanon for the hot and cold water distribution system for the building. Beta-PPR is a higher performance material with a unique hexagonal crystal structure which further improves its mechanical properties and enables it to be used at higher stress level than standard random polypropylene materials. This material, Beta-PPR RA7050-GN, is produced using multiple reactor technology by Borealis in Europe and although it has only been available for a few years it has already been used for many of the iconic buildings in the Middle East.

Like other PP-R materials it is easy to extrude pipes and injection mould fittings and since it is light in weight and flexible it is easy to install particularly in small spaces. The pipes and fittings can also be fusion welded which produces very secure and leak-free joints which will operate without any maintenance for many years.
The benefits

Being lightweight and flexible the PP-R pipes are easy to manoeuvre into position in the tight spaces available for the replacement of old systems or the installation of new ones. The pipes and fittings are fusion welded which means there is no danger of longer term leaks due to the deterioration of any rubber rings or gaskets.

In addition the bore of the PP-R pipes is very smooth and low in friction and therefore there is a low tendency for any build up material in the pipe. Also since PP-R is corrosion resistant the water remains clear and taste and odour free.

Despite being relatively new the Beta-PPR material has been used in many new prestigious buildings, particularly in the Middle East. The new ADNOC Headquarters is yet another example that demonstrates that PP-R systems are ideal for high rise prestigious buildings as well as for domestic and industrial buildings.

Summary table

<table>
<thead>
<tr>
<th>Customer Name</th>
<th>Advanced Plastic Industry (API), Beirut, Lebanon</th>
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<tbody>
<tr>
<td>Application/Product</td>
<td>PP-R hot and cold water system</td>
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<tr>
<td>Grades Used</td>
<td>Beta-PPR™ RA7050-GN</td>
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</tbody>
</table>
| Functional Requirements | • Easily installed system  
• Long maintenance free life |
| Benefits | • Long successful track record  
• Welded water tight system  
• Good impact strength  
• Corrosion resistant  
• Low incrustation tendency  
• Noise dampening plastic material  
• Excellent long term pressure resistance  
• High durability |

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