



18.10.2004 | Gigantic investment in South-China

Corrosion protection for 11 petrochemical plants under construction

China is booming, especially the economic region Pearl River Delta situated in the southern Chinese province of Guangdong which in 2002 generated 80 percent of this region's gross domestic product. In fact, businesses from all over the globe are being drawn to this part of the world, including Shell Chemicals, one of the foremost players in its market. Investing in the Pearl River Delta, Shell Chemicals is currently setting up together with its joint venture partner CNOOC a new petrochemicals complex. On an area of around 4.3 square kilometers eleven plants are being built for producing a variety of products such as ethylene, propylene, butadiene, and styrene monomer. The project in its entirety costs around US \$ 4.3 billion and represents China's largest ever capital investment.

Among the subcontractors involved is Shanghai Peiniger Corrosion Protection Engineering Company, Ltd., a subsidiary of Gelsenkirchen-based PeinigerRöRo GmbH, which by June 2005 will provide corrosion protection coating for the altogether 130,000 square meters of pipes and 140,000 square meters of steel structures and vessels. The client is EPC (Engineering, Procurement, Construction) Consultant Technip France, also involved in the project. "On its size alone, this megaproject represents a completely new challenge", states Michael Schurig, Managing Director at Shanghai Peiniger, a company with longstanding experience in providing chemical and petrochemical complexes with the necessary corrosion protection. And this was what tipped the scales in favor of Shanghai Peiniger.

Sticking to ISO-standards

For setting up the construction site and building a blasting and painting facility, Shanghai Peiniger was allowed a period of two-and-a-half months. Besides the required equipment, this shop also features extensive air conditioning systems in order to maintain the needed temperature and humidity. During the months of June to September, humidity is so intense that but for the air conditioning systems, moisture would settle on the cold steel surfaces and hence impair the quality of the coatings.

Shanghai Peiniger employees started work on the project at the end of April, seven days a week, eight to ten hours a day, in some cases in two-shift operation. Some 400 to 600 square meters of pipes are handled by the blasting and painting shop per day. Before starting on the coating application, the 80 to 100 specialists first clean all steel surfaces are cleaned either by high water jetting or steam in order to remove any salts, grease or other contaminants. Following this, all the surfaces are dry blasted – cleaned to SA 2 1/2, according to ISO 12944, part 4. Since some of the pipes are made of stainless steel which is incompatible with metallic abrasives, Shanghai Peiniger opted for garnet, a natural crystal of vast density and hardness mostly mined in western Australia. This is a material whose properties make it the ideal cleansing agent. Moreover, this natural product can be repeatedly used – from four to seven times.

Following the surface preparation, the workers then go about applying two/three layers by airless spray. Besides this the final coat on already coated steel structures has to be applied. Here, too, ISO requirements regarding the necessary layer thickness and adhesive properties need to be observed. Around 30,000 kg of coating materials – internationally acclaimed Akzo and Sigma systems – are consumed in the course of the project. Where possible, solvent-free or low-solvent materials are used so as to reduce environmental impact to a minimum.

Uncompromising

Shell sets enormous standards regarding environmental protection, occupational safety and health for all those working on the site. The corrosion specialists wear special clothing and fresh-air ventilated helmets during the surface preparation work. As protection against the spray mist arising during the coating stages, respiratory protection masks are a must. From May to September, the climatic conditions are extremely critical: temperatures of over 30 degrees Celsius in the shade and a relative humidity make work very difficult. And things don't improve much nighttime either.

The construction of this gigantic complex is making good progress any by the end of 2005, it is scheduled to come on stream to produce around 2.3 million tons of various chemical products annually.

Ulrike Grönefeld

ThyssenKrupp Services

Tel.: 0211-967 5792

ulrike.groenefeld@thyssenkrupp.com

Copyright© 2003 by PeinigerRöRo GmbH