

## ***Cathodic Protection on DESFA and a proposed upgrading project***

By Nick KIOUPIS, Corrosion Engineer at DESFA

The proper operation and effectiveness of the Cathodic Protection System (CPS) is challenged by interference from external electric sources, such as lightning, dc or quasi-dc stray currents caused by man-made or natural phenomena, as well as by ac and fault currents induced by power lines.

In addition, the CPS must follow up the rapid technology and knowledge advancements. During the last decades, the study of two different failures phenomena, specially corrosion by ac on the one hand and pipe wall melting by lightning on the other, constitute two major breakthroughs in our understanding of corrosion protection and failure prevention which drastically changed earlier perceptions.

The continuous activities of DESFA to upgrade the CPS and corrosion prevention measures in this respect are outlined. The efforts of keeping abreast of the technology progress, international research and the adoption of sophisticated equipment, materials and inspection methods are also described.

The adoption of sophisticated equipment has been implemented, such as special coupons with data loggers for monitoring of corrosion rate and protection effectiveness, large scale project of lightning protection system improvement, detailed investigation of lightning risk on pipeline integrity, cathodic protection stations powered by renewable energy sources, long-life reference electrodes, remote monitoring and control systems, efficient cathodic protection data management, modern coatings as well as technologies for protection of flanges from dirt and weather conditions.

Despite our long lasting and continuing efforts during all previous years to improve and maintain the CPS, by doing our best to keep up with knowledge and technical progress, it is now high time that we started a CPS upgrading project on a larger scale.

This project is comprised of three major tasks. First is the upgrading of the remote monitoring system, second is the review and updating of proximity effects studies for electrical interference including an updated lightning risk assessment and third is the replacement of the outdated dc decoupling devices.