



Large AkzoNobel service order for Norit Nijhuis

Overhaul of pumps saves customer up to 50 percent on annual maintenance costs

INGE SLUIJTER ■ NORIT NIJHUIS' SERVICE DIVISION IN TYNAARLO, THE NETHERLANDS, WAS RECENTLY GRANTED THE CONTRACT TO OVERHAUL SIX BOREHOLE PUMPS USED IN AKZONOBEL'S SALT EXTRACTION PROCESS IN ZUIDWENDING AND HEILIGERLEE, THE NETHERLANDS. THIS IS THE RESULT OF A NEW COLLABORATION BETWEEN AKZONOBEL AND ENERGY COMPANIES NUON AND GASUNIE THAT HAS LED TO CHANGES IN THE SALT EXTRACTION PROCESS. PUMPS THAT HAD BEEN USED TO MOVE SURFACE WATER ARE NOW EXPOSED TO WEAK BRINE, WHICH WILL RESULT IN CORROSION OF THE PUMP HOUSINGS AND PROBLEMS WITH THE SHAFT SEALS. TO GUARANTEE A RELIABLE PROCESS, OVERHAUL OF THESE PUMPS IS NECESSARY. THE RESULTING CHANGES WILL ALSO SAVE AKZONOBEL 50 PERCENT ON THE ANNUAL MAINTENANCE COSTS.

The Zuidwending location is a good source for salt extraction, but the condition of the deep underground area also appears to be suited for natural gas storage. Both Nuon and Gasunie are preparing the ground where the salt brine extraction takes place to serve as natural gas buffers which, starting in 2011, will serve to compensate for sudden differences between supply and demand in the natural gas network.



The collaboration with Nuon and Gasunie has resulted in changes to the brine extraction process. Previously, surface water was pumped into the AkzoNobel boreholes to a depth of 1,500 meters, causing the brine to return to the surface through long transport pipes. This brine is put through an evaporation and drying process in the Delfzijl factory, resulting in the annual production of 2.2 million tons of the highest purity salt from all the extraction locations.

To create the natural gas storage area surface water is pumped into the energy companies' boreholes at high speed to form underground caverns that can later

serve as a natural gas buffers. During this process weak brine rises to the surface that is not directly suitable for production of salt in the factory. In order to recover this salt, AkzoNobel uses the Norit Nijhuis pumps to pump the weak brine back into its own caverns, which produces a saturated solution that is suitable for further processing.

Overhaul of the borehole pumps

For the existing Norit Nijhuis borehole pumps this has meant a change of the pumped medium. "Nijhuis Services will replace all the cast iron parts that come into contact with this medium with parts made of aluminum bronze, a material that is suitably resistant to the highly corrosive character of weak brine," explained Gerard Scholten, Director of Services at Norit Nijhuis. In addition, the shaft seals will be replaced with special seals, developed in collaboration with Burgmann, a seals specialist. These seals can withstand the high pressure in the pumps.

Finally, to support the new, highly variable conditions in which the pumps are used, Norit Nijhuis has developed software that indicates when fewer or additional pumps should be active to achieve maximum operational energy efficiency.

"Altogether it's a demanding job, because the pumps will be removed one at a time, modified and then reinstalled," Scholten said. "The entire project is scheduled for completion by the end of 2010."

