

## BHDT Installation Services at YARA Canada

In September 2009, BHDT Service has provided Installation Services at the Urea debottlenecking project of YARA Canada in Belle Plain, Saskatchewan, Canada.



Picture: YARA Canada in Saskatchewan, Canada

The Stamicarbon CO<sub>2</sub> stripping urea plant had an original design capacity of 2000 mtpd and was constructed in 1992 by Uhde, Germany. In 1997 the design capacity has been increased to 2850 mtpd and now in September 2009 increased again to 3450 mtpd.

Obviously several modifications in the High Pressure synthesis section were required including new High Pressure pipelines, High Pressure control and manual valves and modifications of High Pressure pipelines. All these modifications had to be implemented during the major overhaul, which was scheduled after four years of operation. The maximum turnaround period was only four weeks, about 150 people were working simultaneously at site during the turnaround while BHDT Service was present with two qualified welders, qualified according ASME section IX following local Canadian regulations.

BHDT has been responsible for the supply, the pre-fabrication at site, the installation during the turnaround (welding of Safurex<sup>®</sup>) and the quality control. The scope of supply did consist of HP Pipelines (mainly 1, 2 and 6"), several HP control valves and HP angle valves and numerous miscellaneous fittings, all Safurex<sup>®</sup> materials.

Safurex<sup>®</sup> is a super duplex material developed by Sandvik Materials Technology and Stamicarbon and offers several significant advantages above the traditional austenitic stainless steels.

For example Safurex<sup>®</sup> offer a higher mechanical strength so lower schedules (smaller wall thickness) are possible leading to lower costs and lower weight. Furthermore due the smaller wall thickness downscaling is possible as the internal diameter is decisive in choosing the pipeline diameter. Due to its higher hardness figures erosion corrosion is reduced significantly. Safurex<sup>®</sup> has much better corrosion resistance properties so that condensation corrosion, crevice corrosion and stress corrosion cracking risks are not applicable anymore. Further active corrosion cannot occur with Safurex<sup>®</sup> materials so less or no oxygen are needed anymore. BHDT has been the first Safurex<sup>®</sup> HP Valves and HP Piping supplier qualified by Stamicarbon.



Various bends of Safurex<sup>®</sup> material



and various High Pressure pipe fittings in Safurex<sup>®</sup> material were delivered at site.



The pre-fabrication was executed at site already before the start of the turnaround in order to minimize the necessary work during the turnaround.



For example these three welds were already finished and tested before the start of the turnaround.



During the turnaround the installation and the remaining welding activities were successfully realized in the limited turnaround period; totally some 150 welds were made and tested.



These two large High Pressure control valves going to be installed.



Many tie ins were to be welded during the turnaround.



All welds were realized without any defects confirming BHDT's Best Quality and Maximum Reliability.  
**Assuring YARA Canada a Safe and Reliable operation.**

## **Conclusions**

High Pressure Piping in the High Pressure synthesis section of a urea plant deserves the Best Quality and Maximum Reliability. A proper installation of High Pressure Piping during the construction phase of a project and certainly during the hectic of a turnaround is not an easy job. Quality assurance of the materials applied, proper alignment, the welding, the piping supports and the insulation are all critical and directly related to a reliable and safe operation of the plant. Any unexpected shut down of a urea plant leads to high costs.

BHDT has the experience and Know How available to assure you Best Quality and Maximum Reliability. With BHDT Services, BHDT intends to provide added value to her clients by offering Full Life Cycle support for all High Pressure Piping systems.

The activities of BHDT Service include all activities related to High Pressure piping systems during the lifetime of a urea plant; from Basic and Detailed Engineering, Installation services, Corrosion Inspections, Troubleshooting, Emergency supply/repair, Spare Parts Management up to Training Programs.