Functionality and lifecycle remain key to materials selection

The Melkøya LNG plant in Norway

Mr Olav Nybråten is Company Representative for Valve Frame Agreements and Specialist Piping and Valve for StatoilHydro in Oslo, Norway. With thirty years of experience in the oil and gas business he has a clear idea of how to select the best valve for the job, and the best material to make it from.

By John Butterfield and Joanne McIntyre

M r. Nybråten was employed by Hydro straight after finishing Mechanical Engineering College 1980. “Initially I was working with actuators and control systems for the shipping industry. At that time we were sitting at drawing tables and doing our calculations manually! Our small workshop was specifically involved with actuators, although later the focus shifted to piping and offshore installations. After a few years I moved to the Oslo office and became involved in offshore projects on the Norwegian continental shelf. Today, having gained almost thirty years of experience, my focus has shifted to piping and valves design. The merger of Statoil and Hydro to form StatoilHydro in 2007 presented me with the opportunity to take over the responsibilities from colleagues who retired at that time, and part of my job is assisting to harmonize the company’s combined internal processes.”

A typical day

“Typically mine starts by responding to emails, clarifying any issues that arise and answering queries from both our internal and external networks,” says Mr. Nybråten. “I may work on preparing presentations on valve topics, or developing specifications for new valves. Of course valves are always connected to a piping system so part of my job is to define the piping classes we need to use with respect to placement, the environment it will be used in, and so on. The Piping & Valve department is responsible for overseeing the statutory requirements, contracts, installation and testing of all StatoilHydro piping systems.”

“As I am not linked to one specific project I travel to our various sites in Norway, and also visit our suppliers regularly. While StatoilHydro works from a preferred supplier list we will occasionally visit a new supplier if they have produced something of particularly interest, although this is quite rare,” explains Mr. Nybråten.

Daily challenges

“In this business we face unique challenges,” he says. “It seems that everybody has an opinion about valves and that leads to interesting discussions! For instance the issue of a valve’s functionality often arises. Some people say that the function of a valve is simply to open and close so why not select the simplest, cheapest valve
Maintenance not always cheaper solution

Interestingly, the recent economic downturn has not necessarily led to a preference for repairing or refurbishing equipment rather than replacing it, explains Mr. Nybråten. “We have had discussions within the company as to whether it is more economical to replace or repair a valve. As the cost of organizing a repair is quite high it’s often cheaper to simply throw it away and fit a new one. There is an upper limit of approximately EUR 3000, and if a new valve costs more than that then we look more closely at repairing it, depending on the expected remaining life of the unit.”

Valve and material selection

At StatoilHydro the main piping material selection is carried out by the Materials Department in cooperation with Process and Piping & Valve Departments. “My department assists in selecting materials for valves, and particularly for the internal components and the seals,” continues Mr. Nybråten. “The most commonly used materials for our valves – apart from carbon steel – is austenitic steel such as 316 and 6 Mo, plus a small amount of super-austenitic material. Usually, 6 Mo is used for process requirements where there are very high or low temperatures. In the process plants the most commonly used materials are duplex and occasionally super duplex. Duplex is our primary choice while super austenitic material and super duplex is mainly selected for particularly corrosive environments or in situations where weight savings are important, such as in high pressure offshore equipment.”

“StatoilHydro has frame agreements in terms of the specifications we require with many of the main valve and piping suppliers in Europe. This is a parallel competitive agreement and is applied across the company for all its plants and the installations. Generally speaking we are quite traditional in selections, preferring to use well-known and trusted valves. The basic criteria for selection are good functionality and maintainability. In my view selecting very specialized valves can lead to unexpected behaviour and difficult maintenance and servicing, which could undermine the ultimate functionality of the valve. In the oil and gas industry we can’t afford to take the risk of something going wrong. We’re very dependent on the good functionality, long service life and high safety of our equipment.”

This conservatism was highlighted when nickel prices rose sharply at the end of 2007 and beginning of 2008. “The price rise didn’t affect our use of duplex and super duplex in corrosive service, despite the increase in lead times for medium and large sized valves to up to one year. Functionality and service life remained the most important factors so our material choices remained unaffected. It did mean however that long-lead items needed to be ordered very early and deliveries tracked closely.”

One way that StatoilHydro combats long lead times and potential shortages of equipment is to maintain its own significant operational stock of large sized valves.

More communication needed

Mr. Nybråten likes to jump on his bike and cycle away the daily stresses of his job in the beautiful Norwegian countryside. However he also has some advice to manufacturers of valves and pipes which would help to make his job a little less stressful.

“I would like to see suppliers providing more information about their operational experiences. Organizing events such as seminars and workshops to discuss the status and performance of valves would be tremendously helpful, but that means that they would need to have good contact with professional organizations. Suppliers could both ask for and provide more information about their products so that it is clearer for all of us what the capabilities, advantages and disadvantages of each product are. This would also help them to better understand the end users needs,” he concludes.