



Dalian DV Valve

A history of valve excellence

Dalian DV Valve prides itself on being a producer of high-quality valves for a range of industries and has positioned itself as a special focus on the nuclear industry. The company's capabilities have grown over the past few years and it has supplied valves to several prestigious domestic projects. Huang Juan from the Shanghai office of Nuclear Exchange visited Dalian's headquarters in Liaoning Province to learn about its future plans from Mr. Xiao Jian, Vice President, Researcher (Professor) and Senior Engineer of the company's nuclear division. During his 28 year career path at Dalian DV Valve, he has worked specifically in the nuclear valves for more than 10 years.

By Huang Juan, Shanghai, China

The booming valve market in China have provided Dalian DV with a good balance between exports and domestic business, fuelled by the company's strategy

of investment and R&D. "With the development of domestic manufacturing of nuclear equipment in China, a many manufacturers have strengthened their abilities in equipment modification

and productivity," says Mr. Xiao. Dalian DV has made a number of significant investments over the past two years, not least in human resources.





“Human resources are a key factor in the nuclear industry,” explains Mr. Xiao. “There is a gap between China and other advanced countries regarding the quality of nuclear personnel and the understanding of international standards. For example in China, we don’t have so many self-designed nuclear products, and most of the standards we implement are ASME and RCCM, which take us time to fully understand. In 2009 China started a massive increase in nuclear construction, and one year later, the preparation of new product R&D started. During this period human resources played an important role, so the cooperation in terms of production, study and research between



The headquarters of Dalian DV Valve in the town of Dalian in Liaoning Province, China.

manufacturers and some universities has become necessarily important. Within Dalian DV we have more than 40 technical staff specialized in new product R&D. To help them further to understand nuclear standards and techniques, the company has been sending them to workshops held by the some research institutes and having them communicate closely with invited foreign specialists. The company itself has been working closely with some key Chinese nuclear institutes such as the Shanghai Nuclear Engineering Research and Design Institute and Guangdong Nuclear Power Design Institute, as well as the famous Qing Hua University to develop products to be used in second and third generation nuclear power plants.”

Dalian DV company strategy is to invest at least 10 million RMB per year in the research and development of new products. A recent example is the expansion of its in-house production and testing facilities. The company purchased extra land to expand the size of its current nuclear valve workshop to 20,000 m². By 2013, when the expansion is completed and the new workshop is fully operational, the company’s annual capacity for producing nuclear valves is expected to double to 40,000 units. In 2011, the company introduced an advanced high-grade, precision machining center, which has enabled it to achieve better quality and reliability of its products by saving on the operating procedure and assuring the dimensional accuracy of the products.

Simulation experiments have been implemented to test the products throughout the tempering process to ensure that all products meet the demanding requirements during real service in a nuclear power plant.

Strong domestic market

While the oil and gas industry accounts for the majority of Dalian DV’s products, nuclear valve sales make up 20% of the company’s total sales. Because the Chinese nuclear industry was developed relatively late compared to other countries around the world, most sales of nuclear valves are generated from the domestic market. “In fact within China, Dalian DV’s products have been used in every single nuclear project, both those in operation and those under construction,” smiles Mr. Xiao. “In addition some of our products have been supplied to national experimental reactors which have even more critical requirements than power plants.”

As a result of acquiring the ASME N and NPT stamps, the company has supplied more than 7000 valves to the AP1000 nuclear projects.

“The Fukushima incident had a huge impact on the whole world’s nuclear industry, including China,” explains Mr. Xiao. “Following the accident the China government slowed down its nuclear production, which has had an influence on the sales and payment collections for our company as a key valve supplier in the industry. Despite this there has in the long term been a positive





outcome, taking into consideration the improved requirements for quality, technology and safety during production for many manufacturers at different levels. This will significantly lead the Chinese nuclear industry in a safer and more efficient direction, for example, the improved service life of nuclear products.”

As a responsible and loyal supplier in the nuclear industry, after the Fukushima accident Dalian DV has worked on self evaluation and improvement. For example, its current products have been

evaluated, especially on those with special requirements to be used in new projects, and the implementation of improvements of the performance and sealing reliability of its valves.

Domestic manufacturing projects

For the past few years Dalian DV has been involved in an important main steam isolation valve (MSIV) project with support from the government and nuclear authorities. As a major designer of this project, Mr. Xiao says: “The sole purpose of this valve is to protect the

steam generator during the critical event of a pipe break downstream of the valve. The quick-closing MSIV is required to close within five seconds once a pipe break is detected, to protect the steam generator. This is of course one of the most complicated valves to make, and it must be produced to the highest standard. The domestic manufacturing of this product has entered into a new stage with it now being used in the High Temperature Gas-cooled Reactor at Huaneng Shandong Shidao Bay Nuclear Power Co., Ltd, and the products will be also sent to AREVA Germany for testing. Once this has been completed, Dalian DV will begin large-scale supply within China. With some financial support from the Chinese government, the company is now working on the R&D of MSIV with an outside diameter of up to 1050mm and some other domestic manufacturing projects such as explosive valves, two-phase flow valves and main feed check valves which are expected to have research results during 2013 and 2014.

In addition to these important projects, DV has also been closely involved in

Wide range of products

Dalian DV’s products include more than 500 different models covering 20 categories of valve including Gate Valve, Globe Valve, Check Valve, Throttle Valve, Ball Valve, Plug Valves, Butterfly Valves, Steam Traps, Instrument Valve, Regulating Valve, Bellows Valve, Flat Gate Valve, Vacuum Valve, Low/ Ultra Temperature Valve, Anti-sulfur Valve, Y-valve, Nuclear Grade Valves, Military Valves, Special Valves and pipe Flange, Valve Operating Mechanism, etc.



(C-2) Globe Valve Nuclear Class 1





*Nuclear
Pneumatic
Ball Valve*



*Gate Valve
Nuclear
Class 2*



Swing Check Valve (High CV)

domestic valve manufacturing for the CAP1400 nuclear project, one of the 16 major nuclear power plants provided for in China's medium and long-term technology development plan. In civil applications, Dalian DV has been targeting the domestic manufacturing products used in high-end industries such as petroleum pipeline systems, LNG and ultra supercritical thermal power generating. The company has been widely involved in R&D and the production of the valves used in major national projects for these industries.

For example, the main automatic steam trap valve and three-way valve used in supercritical thermal power generation developed by DV have passed national authentication and achieved the international level, and the company has been also selected to take part into the Shandong Tai'an 600,000 tons LNG project, the domestic demonstration valve project and the heavy caliber ball valve project of West-East natural gas transmission project.

Chinese valve industry

When discussing the development of valve manufacturing in China in general, Mr. Xiao believes that as with other industries, the valve industry will also experience a transitional period. "Currently, Chinese manufacturers are indeed still making low value-added production, for instance manual products, and productivity on valve supporting products, for example control systems. Because many manufacturers do not have well developed production of high-end products, demand for high-tech products still cannot be satisfied locally. Although the Chinese government in recent years has made significant efforts to boost the domestic manufacturing, generally speaking there is still a gap between China and the foreign, more developed countries. However, I believe that the gap will narrow rapidly as a special focus has been given to domestic production of the high-end products in the industry during the governments Twelfth National Five-Year Plan period."

Looking to the future

"After Fukushima accident, some nuclear policy in China hasn't been officially finalized and no substantial progress has been made in new projects; nevertheless, in my opinion, the development of nuclear power is simply a necessary activity we have to choose, considering the shortage of coal and oil resources for coming generations. I think

by the end of the year or the beginning of next year, we will get some positive news regarding new projects. And I also think, for Dalian DV, that prioritizing the nuclear business during the future several decades is the right way to go."

"In the future, we will maintain our focus on internal reforms and R&D, which we believe is the only way to secure long term growth. According to our medium- and long-term planning, we will keep investing in the high-grade, precision and advanced products which we believe will remain the driving force for our development during the coming 10-20 years. We will also keep an eye on the national development planning for the energy industry and the valve industry and put selective attention to some certain projects, such as nuclear, ultra supercritical thermal power generation and LNG projects which can make full use of our own advantages in forging production."

"Human resources will be also remain a constant focus, and we hope to introduce more talent into the management team." To complete its product portfolio, the company has the intention to acquire other valve manufacturers and to expand its forging business for the automotive industry. Plans to acquire another forging manufacturer specialized in automotive components are also in place. To expand its presence in the oversea market, the company's strategy is to enhance cooperation with Areva, and Dalian DV expects to expand its exporting business in Europe, Japan and Korea.

Facts & Figures

Name:	Davian DV Valves
Founded:	1956
Headquarters:	Dalian (Liaoning) China
Staff:	700
Capacity:	800,000 sets of valves/annum
Key industries:	Nuclear, petrochemical, ship building, electric power, metallurgy, machinery, textile, military, etc
Turnover:	RMB 0.5 million (EUR million)

