

Power Steam Valve Chinese Questions and Coatings

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Chinese Questions

The largest market is in China where market share is changing

A number of ultra supercritical coal fired plants have been installed in China. Chinese power plant suppliers are constructing plants in other Asian and Middle East countries.

Since this is such a large segment of the market and since there are new valve suppliers in this segment, we will be providing special focus on it.

There is a national program to develop domestic production of high performance valves

Neway has become a major international valve company. Other Chinese valve suppliers have become qualified for supply to nuclear plants.

Are the Chinese products equal to those by international suppliers?

China FIBC metal seat ball valves research

- In the high temperature, high pressure industrial conditions, high temperature and high pressure Hydrophobic valve Internal leakage will cause a huge waste of energy, and increase the system wear. The traditional Globe valve, Gate valve is unable to adapt to the requirements of high temperature and high pressure conditions. Research and development of high temperature and **high pressure ball valve metal seat (DN40~DN60) has the advantage of technology, can solve the problem of leakage of high quality medium thermal system and equipment wear etc.**
- High pressure metal ball valve seat (DN40~DN60) key scientific research project is the extension of supersonic thermal spraying technology. High pressure metal ball valve seat (DN40~DN60) applied in the electric power industry, **can replace imports, to upgrade the technology level of China's high temperature** high pressure valve, reduce the purchase cost of the device. Therefore, has the practical significance of this research project.

China importing \$ 1 billion of high end power plant valves

- High-end valve used in China at present mainly dependent on foreign imports, the **domestic power plant each year only high-end valve imports more than 10000000000 yuan**, so the introduction, digestion, absorption of the world Famous brand valves Technology, is of great significance for China's equipment manufacturing industry. The small high pressure metal ball valve seat should take the lead in realizing the localization, the project can not only bring considerable economic benefits for the power saving, but also has a huge promotion space in the electric power industry.
- Thermal spraying methods can be divided into combustion method and heating method. Combustion method including flame spraying, explosion spraying; electric arc spraying, including plasma spraying. There are already supersonic flame spraying, supersonic plasma spraying, laser coating, reactive thermal spraying and cold spraying technology.
- . Supersonic flame spraying (High Velocity Oxygen Fuel, referred to as HVOF) The characteristics of this method are: high jet velocity, the flame temperature is lower than the explosion spraying, suitable for carbide coating. Using HVOF coating obtained the highest density of up to 99.9% of theoretical density, strength is above 70MPa; and the coating is less impurities, residual stress in the coating is small, in some cases can be designed residual stress, so it can be sprayed thick coating and spraying, high efficiency. But it also has the disadvantages of large, high fuel consumption cost.

FBIC Research justification

- The main unit in the domestic thermal power generation has increased from 200MW to 300MW and 600MW, parameters by ultra high pressure, subcritical level for the development of supercritical and ultra supercritical. The main problems of boiler, steam turbine steam valve body and pipe under existing technical conditions of domestic is the internal leakage, causing a lot of heat loss. The Metal ball developed in the project with its excellent performance and special seal structure and excellent durability, can solve this problem very well.
- In terms of saving energy consumption, Liaoning Huadian Tieling power company limited can save on cost of coal equivalent to 5000000 yuan. The annual production of 600 sets of high temperature and high pressure ball valve metal seat, can realize sales income 9000000 yuan, profit of 2000000 yuan; The overall project funding needs 4000000 yuan, of which self raised funds of 3000000 yuan, accounting for the overall capital of 75%, apply for the special fund 1000000 yuan, accounting for the overall fund 25%. The application of special funds are mainly used for thermal spraying equipment optimization and a large number of industrial experiments and parameter measurement..

Jiangsu Supernatural

- In recent years, Jiangsu supernatural valve has actively cooperated with the development strategy of the national nuclear localization of the valve and has invested heavily in independent research and development of nuclear power valve It has orders for butterfly valves and ball valves of the nuclear island.
- The company strategy is to focus on metallurgy challenges of nuclear power and to expand petrochemical activities and strive to make new contributions to the development of China's valve industry!

China Valves is furnishing ultra supercritical valves made in China

- **China Valves Technology Receives Approval for localization of ultra-supercritical valves**
- China Valves, a leading Chinese metal valve, announced today that the company has received approval for the location of ultra-supercritical valves for thermal power plants and has also successfully developed cryogenic valves.
- With years of experience in marine rigging hardware, [castings, forgings](#), metal stampings, and [cnc machining](#), Sebon has become a global [supplier](#) of these valve products.
- Sebon is the only company in China that possesses comprehensive technologies for valve locks, locking systems, block valves and control systems. It has four patents and the ability of strong pricing in their industry. Recently, SEBON received an order of 931 valve locks. SEBON has also successfully developed cryogenic valves, which are used in chemical equipment for handling ethylene and liquefied petroleum gas, with a capacity of over 300,000 tons. The cryogenic safety is crucial when the output medium is ethylene, liquid oxygen, liquid hydrogen, liquid petroleum gas or other liquid petroleum products.
- Kaifeng Valve has unique advantages within its industry, as ultra-supercritical materials research, the ability to perform analysis of the structure and stress research and key components, and testing technologies. Its ultra-supercritical valves have been used in the ultra-supercritical Zouxian Shandong thermal power plant having a capacity of 1000 MW. **This application is the first use of ultra-supercritical located valves in China. Previously, all ultra-supercritical valves for thermal power plants were imported.**
- Moreover, China Valves appointed Mr. Wang Zhao as head of research and development. Mr. Wang began researching valves in 1965 and served as chief engineer of a large national company manufacturing the valve. Henan Sebon Industries Co., LTD founded in 1992 and successfully developed large-caliber single-slit welded ball valves and 24-way rotary valves. Mr. Zhao has already begun researching high-pressure ball valves for use in deep water at depths of 1,500-2,000 meters, and military special valves. The successful development of these products could fill a gap in the domestic market.
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Neway Nuclear Valve order for Yangjiang and Fangchenggang

- Neway Valve (Suzhou) Co. Ltd has been awarded a nuclear valve order from CNPEC (China Nuclear Power Engineering Co. Ltd), for the amount of RMB 8,910,000. According to the contract, Neway will provide services for the Project LOT45Ea of Yangjiang Nuclear Power Plant and Fangchenggang Nuclear Power Plant, including supplying conventional island gate valves, globe and check valves to units 1 and 2 of the initial part of the Yangjiang and Fangchenggang plants.

As a result Neway was awarded with their first nuclear valve order after obtaining its license to manufacture such nuclear valves. Additional to this first order, Neway succeeded bidding for two more valve orders from Tsinghua University. The projects are Helium test loop of HTGR (high temperature gas-cooled reactor).

Neway has supplied nuclear high pressure bellow sealed globe valves, control valves, **high temperature ball valves** and lift check valves. Neway has various nuclear class 2 and 3 approved valve designs, being gate-, globe-, check- and ball valves, butterfly valves (class 3). The main supplier of these nuclear valves is Neway's own foundry who holds the license for Nuclear Class 2 and 3 valve castings.

Neway

Compared with soft seal ball valves, Neway metal-to-metal ball valves have wider working temperature and medium range. During working condition, it has the features of reliable and safe sealing performance, long service life, easy operation and less pressure loss. It's mainly used in service of high temperature, high pressure, severe corrosion and solid material containing services, such as coal chemical, polysilicon and vitriol/ nitric acid industry.



Type	:	Floating and trunnion mounted ball valve
Size	:	1/2~24" (DN15~DN600)
Rating	:	150~2500LB (PN16~PN420)
Temperature Range	:	-46°C~450°C
Body Materials	:	Carbon Steel, Stainless Steel, Alloy Steel, Duplex Steel

Coatings

Are coatings necessary?. Which coating approaches are you using? Do you have in house coating facilities or do you use a coating supplier?

Thermal spray coatings for ball valves

- Metal seated ball valves are replacing globe, gate, angle, and plug valves as process streams continue to increase in both pressure and temperature.
- Praxair Surface Technologies offers a variety of thermal spray coatings that increase the life and improve the performance of metal seated ball valves. These wear-resistant coatings, which are applied to the mating surfaces of balls and seats, provide a solution to the wear issues facing ball valve manufacturers and users.
- [http://www.praxairsurfacetechologies.com/na/us/pst/pst.nsf/0/9F52857EF3AB6F9C852576A5006E6B8C/\\$file/P9084_ball_valve_coatings_hr.pdf](http://www.praxairsurfacetechologies.com/na/us/pst/pst.nsf/0/9F52857EF3AB6F9C852576A5006E6B8C/$file/P9084_ball_valve_coatings_hr.pdf)

Sulzer HVOF coatings

Industry	Typical Application
Aviation	Turbine engine fan blade mid-spans, compressor blades, turbine blade roots, bearing journals, stator and rotor disk snap diameters, landing gears, actuators, flap tracks, helicopter rotor joints and sleeves
Power Generation	Industrial gas turbines, hydroelectric Pelton buckets, nozzles and blades, exhaust fans
Automotive	Transmission shifter forks
Transportation/Heavy Equipment	Hydraulic rods, pistons, ship steering rams
Printing and Paper/Pulp Equipment	Print roll covers, inking rolls, calendar and press roll covers
Petrochemical	Pump components, gate valves, ball valves, valve seats, exhaust stacks, sucker rods, hydraulic rods, conveyor screws
Glass Manufacture	Glass-mould plungers
Metal Processing	Steel mill guides and rolls, wire-drawing capstans, forming dies, sheet metal cutters
Textile Machinery	Thread guides, crimping rolls
General Industry	Pump housings, impellers and shafts, plastic extruders, cam followers, wear rings, machine bedways, press fits, restoration of machinery components

Kennametal

- Thermal spray and Stellite weld overlay coatings are widely used to protect balls and seats. But, as customers require improved performance for longer component life, new material solutions are needed. Kennametal has developed surface treatment technologies that metallurgically fuse advanced metal compositions onto balls and seats, resulting in good wear and corrosion resistance in environments where chemicals are transported, often in very high temperatures,” notes Wintle.
- UltraFlex technology enables Kennametal to select the most suitable coating material that will resist specific conditions and offer customers engineered materials beyond standard coatings.
- Kennametal delivers productivity to customers seeking peak performance in demanding environments by providing innovative custom and standard wear-resistant solutions. This proven productivity is enabled through our advanced materials sciences and application knowledge.

Plasma Coating Polymer Solutions

Polymer solutions are available in many versions that can be tailored to individual application/process problems for gas, liquids or solids. Depending on the part geometry and the aggressiveness of the environment, Corrosive resistant coatings can be applied on site while the equipment is still in service or in one of our plants. Application examples include:
Tanks - External Tanks - Internal Secondary Containments Waste Water Treatment Valves/Diverters
Pumps Mixing Vessels Pipes/Spools CATS* Reactors

*Chemical Air Transfer Systems
General Specifications:

- pH Ranges 2 – 12
- Temperature Ranges Up to 550 F
- Thickness 0.010” - 0.060”
- Some versions are FDA Compliant
- Very Good Impact Resistance/ Good Tensile Strength
- Can be applied to any metal with a Rockwell C under 45, some coatings can be applied to hardened steel.