



SUN YE H



山野陶瓷阀 在现代工业中的运用

The Application of Sun Yeh Ceramic Valves in Modern Industry



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

一、陶瓷材料 Ceramic Material

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陶瓷材料广义定义 Broad Definition of Ceramic Material

- 即用天然的或人工合成粉体通过成型、高温烧结而制成的无机非金属固体材料。
- It is inorganic non-metallic solid materials made from natural or synthetic powders by moulding and sintering at high temperature.



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陶瓷材料狭义定义 Narrow Definition of Ceramic Material

- 即传统陶瓷或者硅酸盐陶瓷，用粘土类及其他天然矿物原料经过粉碎加工、成型、煅烧等过程而得到的制品。
- It is traditional ceramics or silicate ceramics, made from clay and other natural mineral materials through crushing, shaping and calcination.



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传统陶瓷材料 Traditional Ceramic Material

- 传统陶瓷即**硅酸盐陶瓷**，分为陶器和瓷器两类

Traditional ceramics, namely silicate ceramics, are divided into pottery and porcelain.

- 陶器：断面粗糙，敲击声沉浊，结构不致密

Pottery: rough cross-section, silent knocking sound and structure is not compact.

- 瓷器：断面呈石状或贝壳状，敲击声清脆，结构致密、细腻

Porcelain: cross-section is stone or shell-shaped, clear knocking sound and structure is compact and delicate.

- 陶与瓷的区别在于坯体的孔隙度，也即吸水率，取决于原料和烧结温度

The difference between them is that the porosity of their green body is different, that is, their water absorption is different, which depends on the raw material and sintering temperature.

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现代陶瓷材料 Modern Ceramic Material

- 现代**特种陶瓷**具有高强度、高硬度、耐高温、耐磨损、耐腐蚀、抗氧化、抗热震等特性，以及优异的电、磁、声、光等物理特点。
- 但因陶瓷品种多，各种技术性能指标相差很大，同时工况条件变化大，不同的使用温度、不同的压力条件，对阀门的要求各不同。正确选用陶瓷材料，才能更好发挥陶瓷的优异性能，再者对陶瓷粉料配比的选择也很重要。
- Modern special ceramics have high strength, high hardness, high temperature resistance, wear resistance, corrosion resistance, oxidation resistance, thermal shock resistance and other characteristics, as well as excellent electrical, magnetic, acoustic, optical and other physical characteristics.
- However, due to the variety of ceramics, various technical performance indicators vary greatly, and the working conditions change greatly. Different operating temperatures and pressure conditions have different requirements for valves. Correct selection of ceramic materials can better play the excellent performance of ceramics. Moreover, it is also important to choose the proportion of ceramic powder.



陶瓷的性能 Properties of Ceramics

- **力学性能**：弹性模量E高，高脆性，破坏方式为脆断。（宁折不弯）低的塑性、韧性，难以进行加工（没有金刚钻）硬度极高，耐磨性好。山野在陶瓷抗折上有独特的解决方案。
- **化学性能**：抗高温氧化，耐腐蚀。（HF，强碱）
- **Mechanical properties**: high modulus of elasticity, high brittleness, brittle fracture mode. (would rather break than bend) low plasticity and toughness, difficult to process (no diamond drill) extremely high hardness, good wear resistance. Sun Yeh has a unique solution for the bending resistance of ceramics.
- **Chemical properties**: high temperature oxidation resistance, corrosion resistance. (HF, strong alkali)



陶瓷的性能 Properties of Ceramic

- **热学性能**：高熔点 ($T_m > 1500^\circ\text{C}$) ，低热膨胀系数及热导率。

- 陶瓷强度的控制和脆性的改善：

陶瓷材料的**强度特征**：实际强度为理论强度的 $1/10 \sim 1/100$ ，具有脆性。提高陶瓷强度的关键是控制其气孔率和缺陷（裂纹和位错）。

- Thermal properties: high melting point ($T_m > 1500^\circ\text{C}$), low thermal expansion coefficient and thermal conductivity.

- Strength Control and Brittleness Improvement of Ceramics :

Strength characteristics of ceramic materials: actual strength is $1/10-1/100$ of theoretical strength, brittle. The key to improve the strength of ceramics is to control the porosity and defects (cracks and dislocations).



陶瓷产品的工艺要求 Process Requirements of Ceramic Product

由粉体制造的陶瓷产品必须考虑：

- 1、材料特征性能（取决于材料的化学成分以及获得的显微结构）
- 2、产品形状和尺寸,以及所要求的尺寸公差（与生产设备和成型方法的选择及其可靠性相关）
- 3、产品的成本



- Ceramic products manufactured from powders must be considered:

1. Characteristic properties of materials (depending on chemical composition and obtained microstructures)
2. Product shape and size, and required dimensional tolerances (related to the selection of production equipment and forming methods and their reliability)
3. Cost of Products



结构陶瓷 Structural Ceramics

- **结构陶瓷（即陶瓷材料）**：有氧化铝、氧化锆、碳化物、氮化物、Silon陶瓷。
- **Structural ceramics**: alumina, zirconia, carbides, nitrides, Silon ceramics.
- **氧化铝**：象牙色，是一种以 $\alpha\text{-Al}_2\text{O}_3$ 为主晶相的陶瓷材料，其中 Al_2O_3 含量一般在75~99.9%之间，通常按含量分类，分75、80、85、90、92、95、99瓷等，山野是用高纯氧化铝99瓷及以上材料。
- **Alumina**: Ivory color, is a kind of ceramic material with $\alpha\text{-Al}_2\text{O}_3$ as the main crystalline phase. Al_2O_3 content generally ranges from 75% to 99.9%. It is usually classified into 75, 80, 85, 90, 92, 95 and 99 ceramics according to the content. Sun Yeh uses high purity alumina 99(or above) ceramics.



结构陶瓷 Structural Ceramics

- **氧化锆**：乳白色，存在3种结晶体，单斜晶、立方晶和四方晶。山野是用综合性能最佳，力学性能好，晶体粒径小的四方晶。
- **Zirconia**: Milky white. There are three kinds of crystals, monoclinic, cubic and tetragonal. Sun Yeh uses tetragonal crystals with the best comprehensive properties, good mechanical properties and small crystal size.
- **氮化硅**：木炭色，具有显著的高耐热冲击性和高强度性能。
- **Silicon nitride**: Charcoal color, with remarkable high heat shock resistance and high strength.
- **碳化硅**：黑色，碳化硅的硬度仅次于金刚石和碳化硼，是一种高导热性、高耐热冲击性及强度耐久性，在所有精细陶瓷材料中，耐腐蚀性能最高的材料。
- **Silicon carbide**: Black, the hardness of silicon carbide is second only to diamond and boron carbide, is a high thermal conductivity, high heat shock resistance and strength durability, in all fine ceramic materials, its corrosion resistance is the highest.



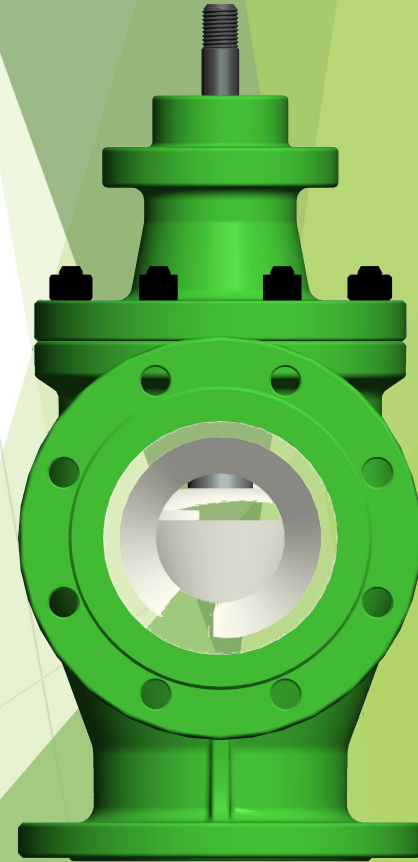
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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

陶瓷阀的独特性能 Unique Advantages of Ceramic Valves

- 陶瓷**硬度高**，洛氏HRA ≥ 88 以上，相当于洛氏HRC ≥ 70 以上，性能稳定，陶瓷件具有自润性，扭矩小，便于远程控制。面对恶劣的工作环境，相比其他材质属性的阀门，陶瓷阀门在化工管道中的应用具有独特的优势和良好的性能，随着社会不断的发展和进步，对产品的环保、经济、性能等要求越来越高；随着技术的不断革新和发展，新型陶瓷的产生使得陶瓷阀门具有可观的应用前景和发展潜力。
- Ceramics have high hardness, HRA ≥ 88 , equal to HRC ≥ 70 , stable performance, self-moistening ceramic parts, small torque, and easy to remote control. In harsh working environment, ceramic valves have unique advantages in the application of chemical pipelines compared with valves of other material attributes. With the development of society, the requirements for environmental protection, economy and performance of products are getting higher and higher. And with the continuous innovation and development of technology, the production of ceramic valves has considerable application prospects and development potential.



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陶瓷阀的独特性能 Unique Advantages of Ceramic Valves

- 如：在氯碱行业中，盐和石灰石的输入管道及工艺流程都比较长，而且工艺复杂。在碱的生产过程中，由于铵离子和氯离子等化学成分的存在，对设备会产生较为严重的磨损和腐蚀，而陶瓷阀门的运用以其良好的性能有效避免了以上问题。
- For example, in the chlor-alkali industry, the input pipeline and process of salt and limestone are relatively long, and the process is complex. In the process of alkali production, due to the presence of chemical components such as ammonium ion and chloride ion, serious wear and corrosion will occur to the equipment, and the application of ceramic valves with good performance could avoid those problems.



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二、 山野特阀技术核心说明

Technical Description of Sun Yeh Ceramic Valves

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山野的由来 The Introduction of Sun Yeh Company

- 山野品牌来自台湾，是国际知名品牌，1986年就开始从事控制阀的研发、生产及销售，至今已有三十几年的实践经验，原来在大陆是以代理销售模式运行，随着发展已远远不能满足市场的需求，经过考察，2014年在青岛高新区建立生产、研发车间，并成立山野集团。
- SUN YE H brand comes from Taiwan of China, which has been engaged in researching manufacturing and selling control valves since 1986. It already has more than 30 years of practical experience. At first, we are just an agent in the mainland, but after years , our company--- Sun Yeh Control Valve Group Co.,Ltd. was established, in High-tech Zone of Tsingtao, in 2014.



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- 山野控制阀是集研发、生产、制造、销售为一体高新技术型+高新技术产品双高企业。注册资本:1亿零8万元; 研发生产面积1万多平米; 主要产品有调节阀、自力式减压阀、闸阀、截止阀、蝶阀、止回阀、球阀等。
- The Control Valves, Self-operated Pressure Relief Valves, Gate Valves, Globe Valves, Butterfly Valves, Check Valves and Ball Valves, especially Ceramic Ball Valves are Sun Yeh'S main products. And it is a high-tech enterprise that set R&D, production, manufacture and sale for one. Registered capital: 10.8 million yuan; production area: 13,000 square meters.
- 山野拥有专业的技术团队、完善的研发设计和生产服务体系, 通过中国船级社ISO9001质量/ISO14001环境/18001健康安全的体系认证, 获得TS(特种设备生产制造许可)认证, 计量认证、SIL安全认证等。配备多台自动化加工系统、专业测试系统、阀门工作状况的仿真模拟系统和专业选型软件等硬件。
- Sun Yeh has passed the ISO quality management system certification, obtained TS certification, metrology certification, SIL safety certification and so on. Besides, its factory is equipped with automatic processing system, professional testing system, simulation system of Valve working condition and professional selection software.



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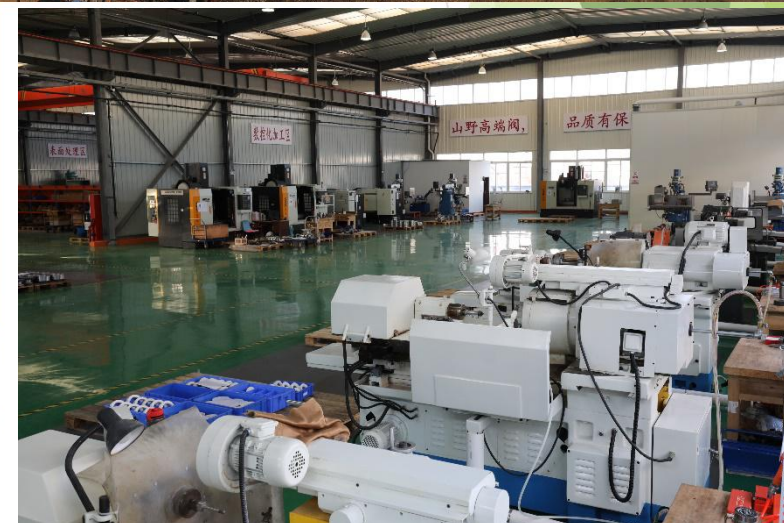
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Regulating Valve, On-off Valve, Ceramic Valve

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设备及场地方面

Factory & Facility



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展厅/培训/人文

Showroom/Training/Humanities



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选原料方面：氧化铝、氧化锆及PSZ陶瓷件

Selection of Ceramic Materials: Al₂O₃, ZrO₂, PSZ

ZrO₂氧化铝纯度

山野进口氧化铝纯度可高达99%以上，烧结温度相比普通的低；与此同时其抗弯强度、断裂韧性、维氏硬度、冲蚀磨损率均比国产氧化铝好得多。

The purity of imported alumina used in as high as 99%, and the sintering temperature is lower than that of ordinary alumina. At the same time, its bending strength, fracture toughness, Vickers hardness and erosion wear rate are much better.



PSZ陶瓷件

适合应用在高温或严重热冲击环境的部件，比传统陶瓷拥有更高的强度、韧性和可靠性。

PSZ ceramic is suitable for high temperature or severe thermal shock, and has higher strength, toughness and reliability than traditional ceramics.

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粉末 powder

现代陶瓷材料所用粉末大多是亚微米级超细粉末，山野采用的是进口纳米级超细粉，保障其纯度和烧结活性。粉末粒径越小，表面积越大，烧结时进行固相扩散物质迁移的界面就越多，即越容易致密化。Most of the powders used in modern ceramics are submicron ultrafine. While the imported nanometer ultrafine powders are used in Sun Yeh to ensure their purity and sintering activity. The smaller the particle size and the larger the surface area of the powder, the more the interface for solid phase diffusion material migration during sintering, that is, the easier to densify.

技术 technology

引进台湾先进的精密360度研磨技术，保证密封贴合面精度，确保硬密封6级、零泄漏。同时引进台湾金属表层喷涂先进工艺，在控制阀的上、下阀轴还有金属球进行镍基热喷涂，保证喷涂厚度和品质可控。

Advanced precision 360 degree grinding technology is introduced to ensure the accuracy of sealing joint surface, and to ensure 6 grades of hard seal and zero leakage. Meanwhile, the advanced technology of metal surface spraying was also introduced, and the nickel-based thermal spraying was carried out on the upper and lower axles of the control valve as well as the metal balls to ensure that the thickness and quality of the spraying were controllable.

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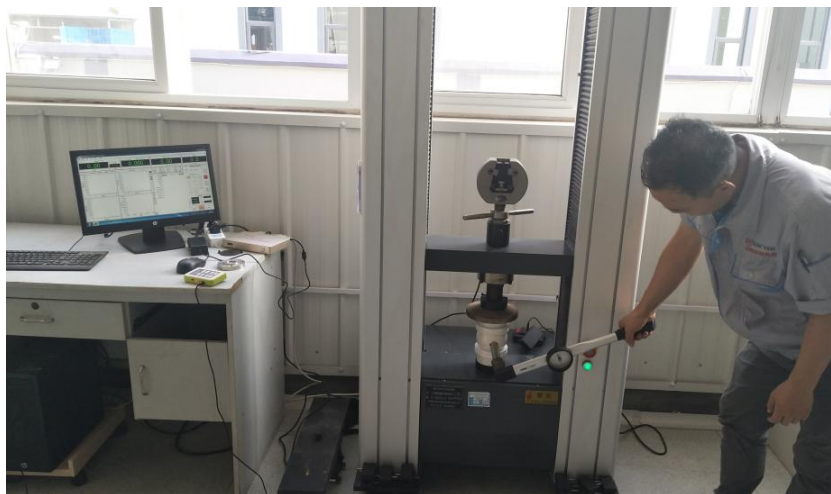
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检测手段

Detection means

从原材料到产品出库，保证每一道工序的质量

Guarantee the quality of valves, from raw materials to products



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山野陶瓷特阀设计宗旨 Design purpose

- 利用新材料、新工艺、新结构，设计结构紧凑、安全可靠、环保节能、功能强大、使用寿命延长的阀门，改善现有阀门中的不足，降低成本。
- Using new materials, technology and structure to produce compact, safe, reliable, environmentally friendly and energy-saving valves with long service life. Improving the performances of modern valves and reducing costs.



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研发历程 R&D Progress



- 2014年，青岛市首台全衬型陶瓷球阀在山野控制阀诞生。
- In 2014, Qsingtao's first Full-lined Ceramic Ball Valve was born in Sun Yeh Control Valve Group.

专利号Patent No. : ZL2017 2 0546018.0

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研发历程 R&D Progress



- 2016年，经过历时2年的市场调研和产品开发，全国首家首台全衬型陶瓷蝶阀、全球首家首台蝶球一体陶瓷控制阀诞生并投入市场验证。
- In 2016, after two years of market research and product development, the first Full-lined Ceramic Butterfly Valve in China and the first Control Valve of Butterfly-type integrated with Ceramic Ball in the world was born.

专利号Patent No. : ZL2017 2 0628492.8

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研发历程 R&D Progress



- 2017年初，经研究发现碱业加工过程中，重碱灰乳用的普通角阀易被冲蚀，更换周期最快达10天一次。公司便致力针对此工况开发新型产品，以便代之。
- In 2017, In the process of alkali working, the common Angle Valves that used in heavy alkali lime cream are easy to be eroded, and the replacement cycle can be as fast as 10 days. Our company was committed to developing new products for such condition.

专利号Patent No. : 201820909864.9

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研发历程 R&D Progress



- 2017年12月，全球首台重碱灰乳用陶瓷角阀诞生。此产品针对碱业高冲刷和强腐蚀介质设计，经过多次使用论证，寿命已达快一年，为客户解决了频繁维修等问题。
- In Dec. 2017, the world's first Ceramic Angle Valves for heavy alkali lime cream was born. This product is designed for high erosion and strong corrosion medium in alkali industry. After practical demonstrations, the Ceramic Angle Valve' s service life is about a year, which solves the problems of frequent maintenance.

专利号Patent No. : 201821048781.1

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三、陶瓷阀的应用

The Application of Ceramic Valves

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调节阀、 开关阀、 陶瓷阀

陶瓷阀在黑水系统中的应用 In Black Water System

在煤气化工段中，黑水介质含有杂质、温度高、腐蚀性强、调节压差大等特点；在催化剂制备装置中，浆料、灰水等介质固含量高，腐蚀性强、冲刷厉害。

In the coal gasification section, the black water medium contains impurities, and it has high temperature, strong corrosiveness and large pressure difference; the catalyst preparation device has high solid content of slurry, ash water and other medias, which have strong corrosiveness and strong erosion.

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陶瓷阀在灰水系统中的应用 In Ash Water System

灰水处理系统的任务有两个，一是对来自汽化炉和洗涤塔的黑水进行水渣分离，二是将此过程产生的热量进行回收。灰水系统中高温热水器、低温热水器和真空闪蒸罐工艺管道和阀门多次出现腐蚀穿孔现象，严重时阀门使用不到10天就发生穿孔，给企业生产带来极大困难。

There are two tasks of ash water treatment system. One is to separate the black water from the vaporizer and scrubber, and the other is to recover the heat generated in the process. In the ash water system, corrosion perforation occurs many times in the process pipes and valves of high temperature water heaters, low temperature water heaters and vacuum flash tanks. In severe cases, the valve perforation occurs within 10 days of service, which brings great difficulties to the production of enterprises.



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陶瓷阀在煤化系统中的应用 In Coal gasification system

煤制油、油改煤及煤气化等煤化系统属于(介质煤渣)高硬度、高压及高温度的工况，阀门应具有耐磨、耐冲刷、防结垢、防结疤及快速切断等功能，这时的阀门密封性能要求高，口径要求大(一般为DN300—DN600)，启闭要求也快且频繁(30min动作一次，5—10s/次)。

Coal gasification systems, such as coal-to-oil, oil-to-coal and coal gasification, belong to the working conditions of high hardness, high pressure and high temperature. Valves should have the functions of wear resistance, erosion resistance, scale prevention, scarring prevention and quick cut-off. At this time, the sealing performance of valves is required to be high, the caliber requirement is large (usually DN300-DN600), and the opening and closing requirements are also require fast and frequent (30 minutes once, 5-10 s/time).



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陶瓷阀在精细化工中的应用 In Fine Chemical Industry

生产阶段 Production stage

介质具有强腐蚀性、高磨损性，温度 $-40^{\circ}\text{C}\sim 280^{\circ}\text{C}$ ，有些部位泄露等级要求VI；传统均采用采用的是衬氟胶的阀门，虽然解决了腐蚀问题，但却不耐冲蚀，无法耐高温，致使更换频繁。

Medium has strong corrosiveness, high wear resistance, $-40^{\circ}\text{C}\sim 280^{\circ}\text{C}$ temperature, some parts of the leakage grade requirements VI; the traditional use of fluorine-lined valves, although solving the problem of corrosion, but not erosion resistance, can not resist high temperature, resulting in frequent replacement.

废气处理阶段 Waste gas treatment stage

陶瓷阀门在高、中、低温有毒有害气体上使用，如氨气、酸性气等工况应用效果极佳。

Ceramic valves are used in high, medium and low temperature toxic and harmful gases, such as ammonia, acid gas and other alike working conditions.





SUN YE H

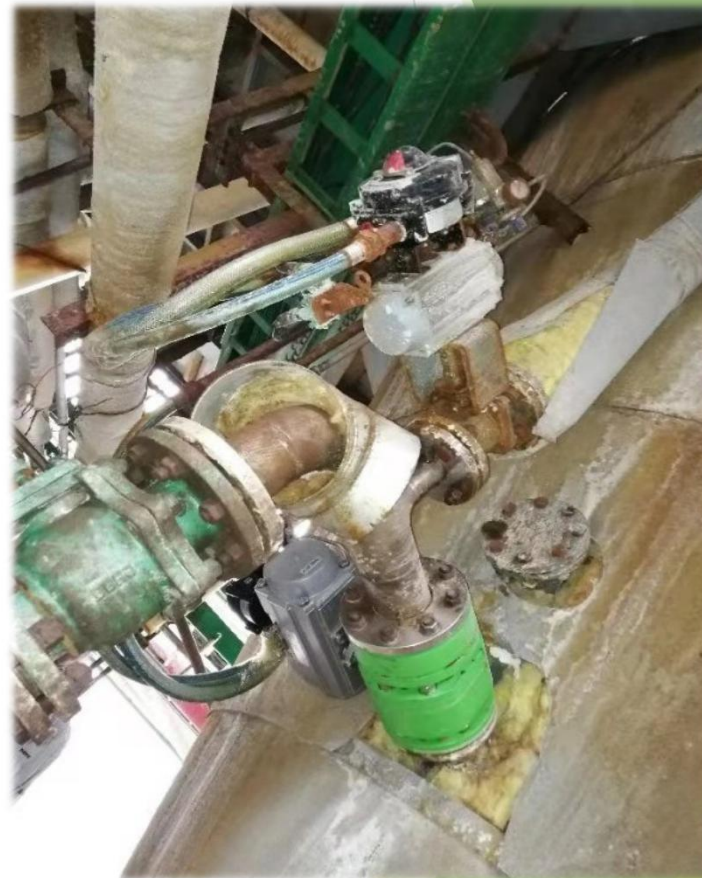
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

废水处理阶段 Wastewater treatment stage

此阶段的介质有强酸、强碱，含有颗粒，腐蚀性强、冲蚀严重，普通阀门磨损厉害，更换频繁，对生产和经济带来很大的损失。

The medium in this stage has strong acid and alkali, contains particles, strong corrosiveness and serious erosion. If ordinary valves are used, they will be worn badly and need to be replaced frequently, which will bring great losses to production and economy.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

陶瓷阀在碱业中的应用 In Alkali industry



在重碱生产中，重碱石灰乳介质，含有颗粒、石块、石灰乳，腐蚀性强、粘稠易卡塞、磨损严重。普通阀门在很短的时间内就会因为冲蚀严重、泄露量大、调节性能差而失效，阀门一旦发生泄漏和频繁维修，将会对环境、经济带来很大的影响。

In the production of heavy alkali, the medium of heavy alkali lime emulsion contains granules, stones and lime milk, which is highly corrosive, viscous and easy to plug and wear seriously. Ordinary valves will fail in a very short time because of serious erosion, large leakage and poor regulation performance. Once the valve leaks and frequent maintenance, it will have a great impact on the environment and economy.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

使用对比 Contrast



普通金属阀使用15天 normal valve used 15-day



山野陶瓷角阀使用半年时 ceramic valve used half a year

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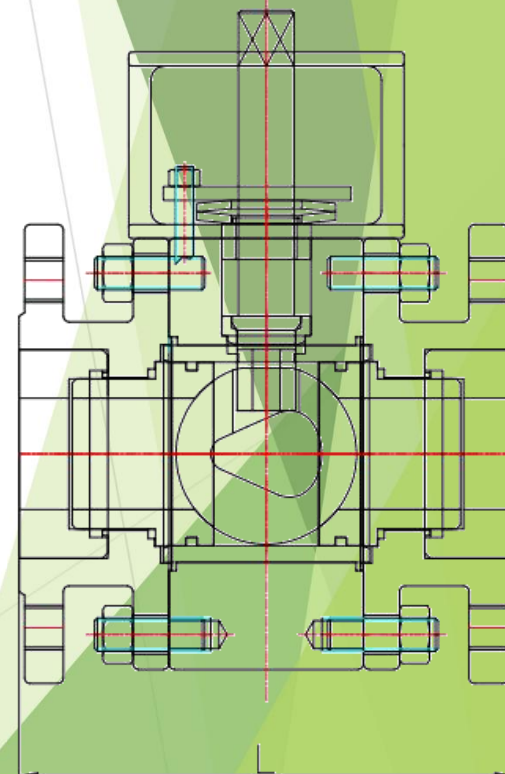
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野陶瓷球阀900T系列 900T Ceramic Ball Valve

山野陶瓷浮动球阀系列，设计型式为精密陶瓷全内衬球阀，采用三段式浮动球结构设计，球和座实现自由对中，通过阀门的流体产生的压差将阀球密封在下游阀座上，具有耐磨损、耐腐蚀、耐高温及防挤碎的性能有切断/调节等多重功能，可在含有磨料固含量的腐蚀性介质中起节流调节、切断控制作用。

Sun Yeh 900T Ceramic Ball Valve Series is designed with precision ceramic full lined ball valves, adopts three-stage structure design, Free alignment of ball and seat, and the ball is sealed on the downstream seat by the pressure difference generated by the valve fluid, which has the properties of wear resistance, corrosion resistance, high temperature resistance and crushing resistance.



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Regulating Valve, On-off Valve, Ceramic Valve

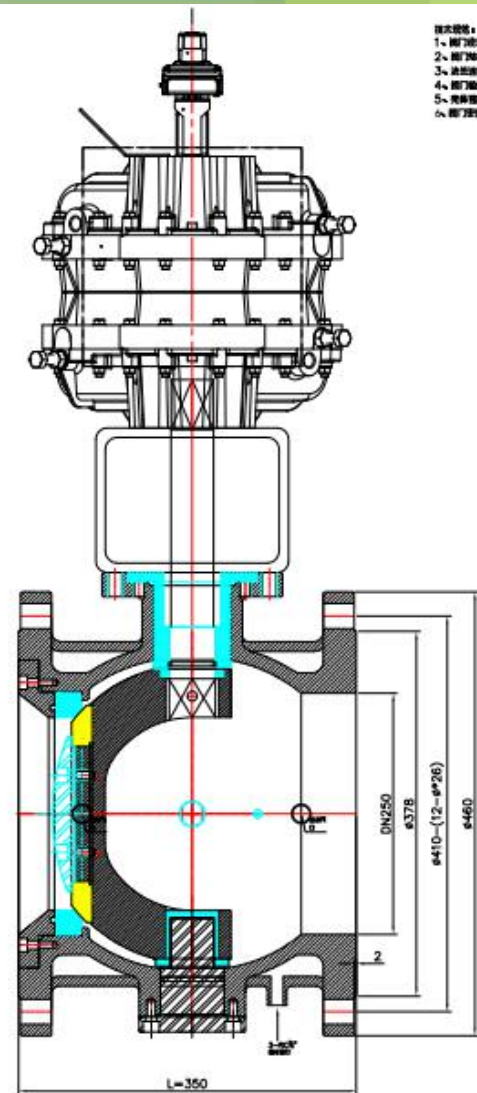
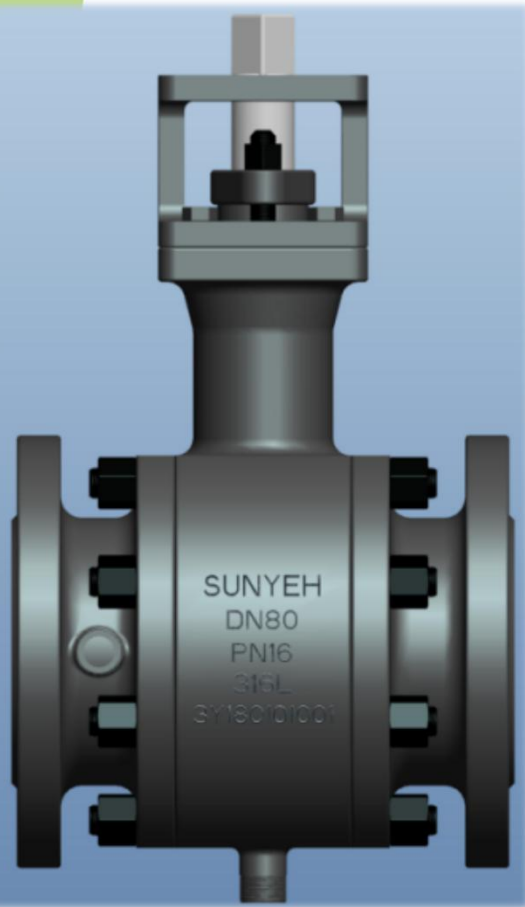
调节阀、 开关阀、 陶瓷阀

山野夹套保温型陶瓷球阀 B90T/B930T系列

B90T/B930T Jacket Thermal Insulation Ceramic Ball Valve

山野夹套保温型陶瓷球阀系列，是在原陶瓷球阀基础，根据客户应用现场工艺需求而进一步开出设计而成的，夹套保温型陶瓷球阀集阀门保温和球阀功能为一体，保温原理是阀门的外层，有保温媒体进和出的接口，导热油或蒸汽顺着进入预留好的腔室流动，媒介预热的温度透过金属传导保温，有效解决由于阀门散热导致球腔内介质降温而造成结晶的困扰，内部结构有浮动球和固定球式两种选择配合，设计型式为夹套保温型精密陶瓷全内衬球阀，具有切断/调节等多重功能，可在含有低温散热后易结晶的磨料固含量的腐蚀性介质中起节流调节、切断控制作用。

It is designed on the basis of full-lined and semi-lined ceramic ball valves. It integrates the functions of valve thermal insulation and ball valve, caters to the technology needs of customers' application on-site. The principle of heat preservation is that the outer layer of the valve has an interface between the inlet and outlet of the heat preservation media, and the heat conducting oil or steam flows along the reserved chamber. The temperature of the medium preheating is insulated through metal conduction, which solves the crystallization problem effectively. Its internal structure has two kinds of choices, floating ball or fixed ball, which both have cutting off and adjusting functions. It can play the role of throttling adjustment and cutting off control in corrosive medium containing abrasive solid content which is easy to crystallize after low temperature heat dissipation.



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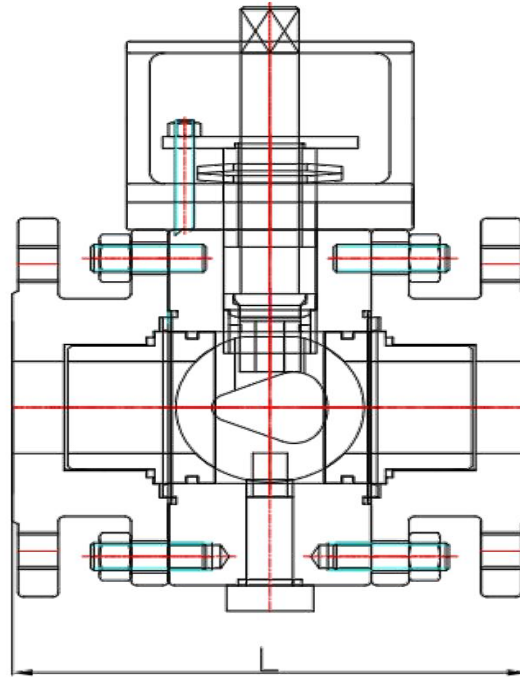
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野陶瓷球阀910T系列 910T Ceramic Ball Valve

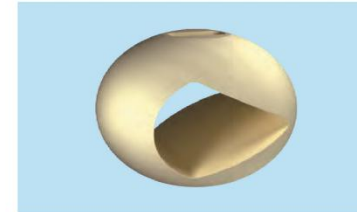
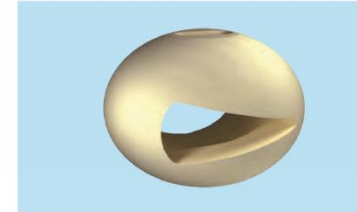
山野陶瓷控制球阀，采用三段式结构，固定球设计，实现较高压差，球始终处于对中轴运动，不受压差变化而产生位移影响，具有耐磨损、耐腐蚀、耐高温及防挤碎的性能。

It adopts three-stage structure and fixed ball design to achieve higher pressure difference. The ball is always in the center axis motion, no displacement because of pressure difference change, and it has the properties of wear resistance, corrosion resistance, high temperature resistance and crushing resistance.



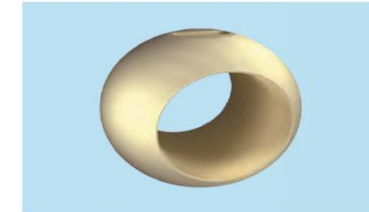
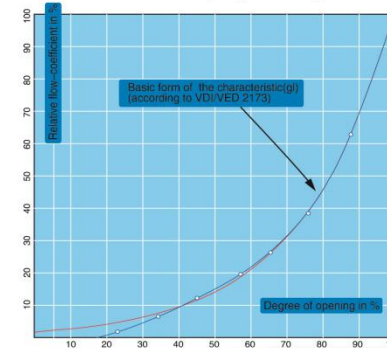
阀芯形状和特性曲线图

阀芯形状和特性曲线图

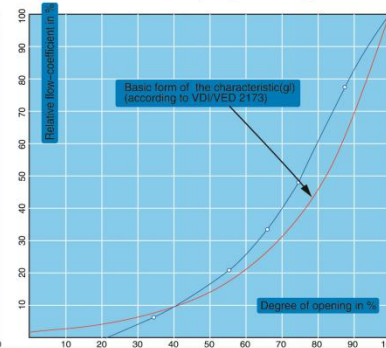


理想的球芯阀控制性能取决于中心壳体的公称直径和球孔的几何形状。圆形和三角V形的孔可以在0和90°之间旋转，所有公称直径的特殊轮廓与调整后Kvs/Cv值是可用的，并定义精准流量的开口截面。

CHARACTERISTICS
Nominal diameter: Dn15-350 · 1/2" -12"
Ball bore: Triangle 三角V形
Characteristic: equal percentage



Nominal diameter: Dn15-350 · 1/2" -12"
Ball bore: Round 圆形
Characteristic: equal percentage



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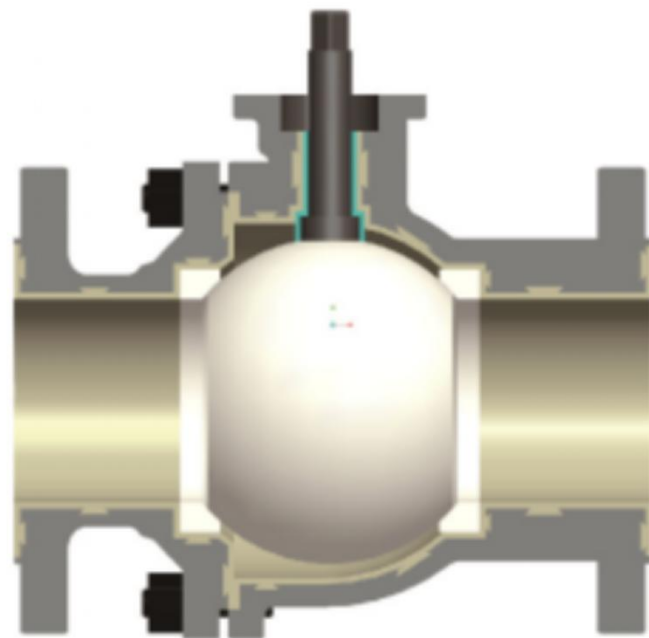
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野内衬PFA/F46的球阀系列 PFA/F46-lined Ceramic Ball Valve

山野90CT衬里固定球阀系列，是在山野全内衬浮动球球阀的基础上开发而成的，更适合于启动频繁强腐蚀工况。

90CT Lining Fixed Ball Valve series is developed on the basis of full-lined floating ball valve, which is more suitable for working conditions of starting frequent and strong corrosion.



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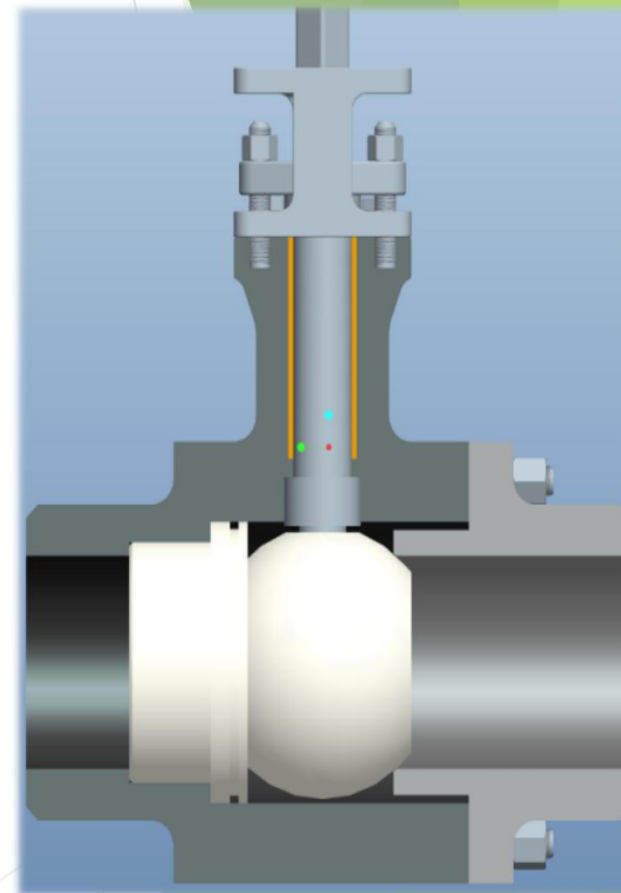
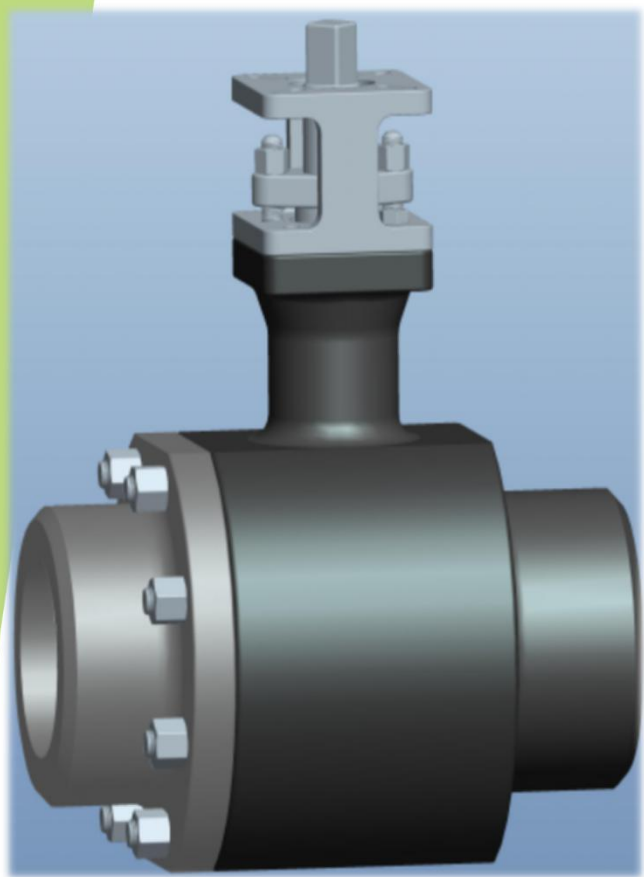
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野金属球阀920T系列 920T Mental Ball Valve

山野920T高压硬密封焊接球阀系列，设计型式为焊接式硬密封球阀，采用两段式结构设计，所有零部件全部采用锻件制，具有耐磨损、耐腐蚀、耐高温的特点应泛应用于电厂除灰、锅炉给水、蒸汽主渠道疏水、黑水、灰水、煤浆、渣水、催化、裂化、加氢、聚乙烯、煤粉、硅粉等系统上应用。

920T High-pressure Hard-sealed Ceramic Welding Ball Valve series, designed as welded hard-sealed ball valve, is widely used in power plant ash removal, boiler feed water, steam main channel hydrophobic, black water, ash water, coal slurry, slag water, catalysis, cracking, hydrogenation, polyethylene, coal powder, silicon powder and other systems.



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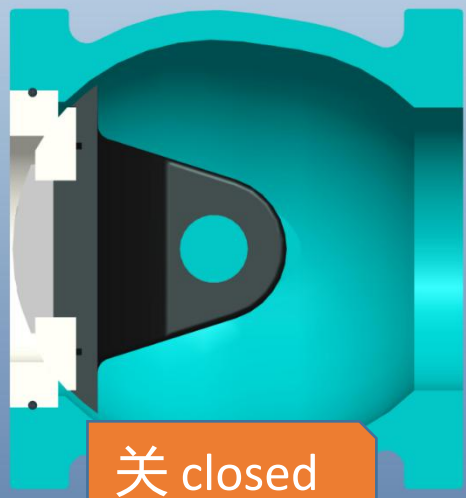
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

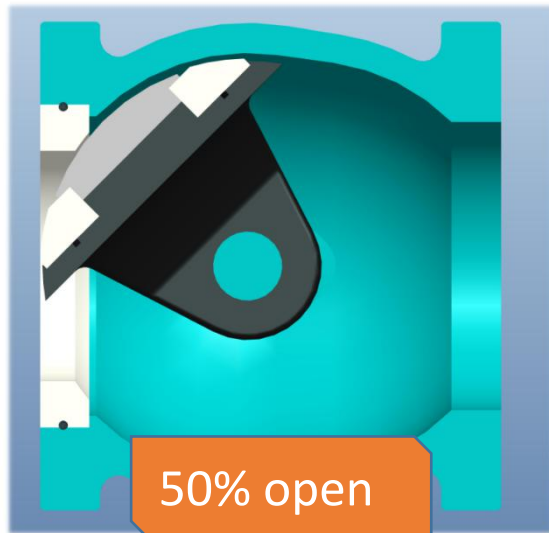
山野陶瓷球阀930T系列 930T Ceramic Ball Valve

930T山野C型陶瓷球阀系列，设计型式为双偏芯设计，扭矩密封。利用双偏芯产生凸轮楔紧效应，实现扭矩密封，关闭时C球相对阀座渐入运动，越关越紧，硬密封泄漏等级达到VI，是典型的球面面密封；具有切断/调节等多重功能，可在含有磨料固含量和含纤维质流体，而且粘度高、易结垢的料浆类的介质中起节流调节控制作用。

It is C-type with double eccentric design, torque sealing. Using double eccentric to produce cam wedge tightening effect to realize torque sealing. When closing, the C-type ball moves gradually relative to the seat, the tighter the clearance is, and the leakage grade of hard seal reaches VI. It is a typical spherical seal. And, it has functions of cut-off and adjusting; It can regulate and control throttling in slurry medium with abrasive solid content, fibrous fluid, high viscosity and scale-prone slurry.



关 closed



50% open



开 full-opened

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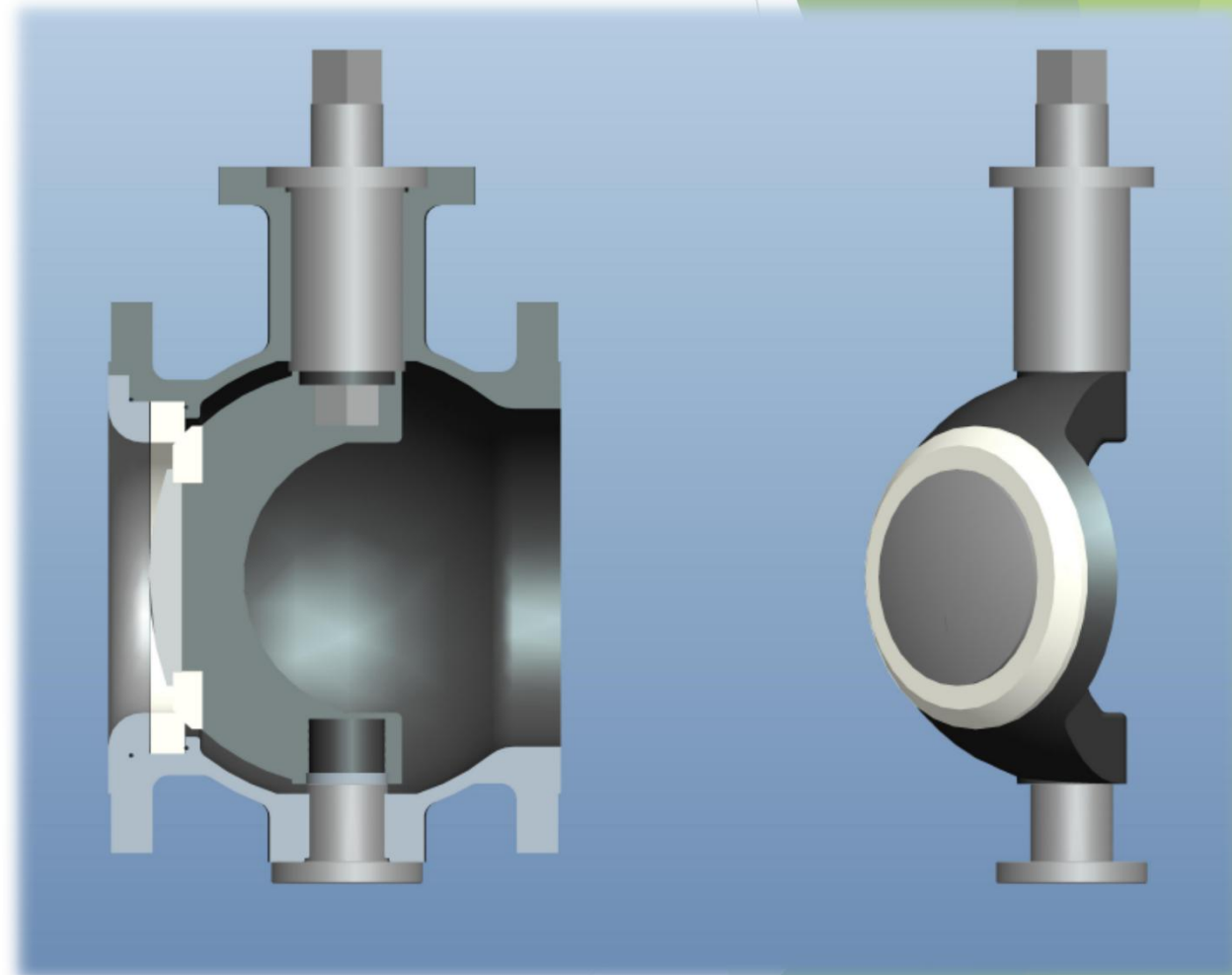
SUN YE H

Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

C型陶瓷球阀，严苛工况，耐磨专用

C-type ceramic ball valve, specialize in hard working conditions, high wear-resistant.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

C型陶瓷球阀 C-type Ceramic Valve Ball

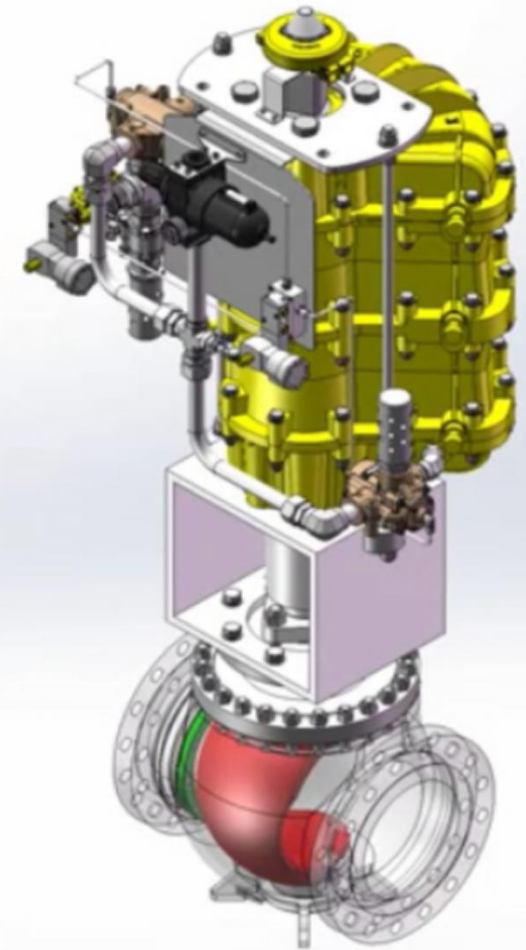
低扭矩 Low Torque

C型耐磨球阀运行过程无摩擦，避免不稳定操作。

With C-type wear-resistant valve ball, the friction coefficient is very low during operation, which greatly reduces unstable operation.

可以使用较小的执行器配合，实现快速启闭和更好的调节比。

Small actuator coordination can be used to achieve fast start-up and shut-down and better regulation ratio.



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Regulating Valve, On-off Valve, Ceramic Valve

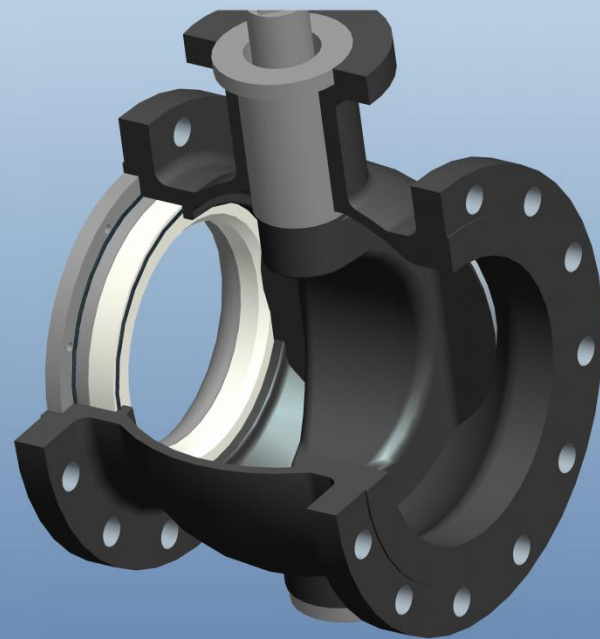
调节阀、 开关阀、 陶瓷阀

C型陶瓷球阀 C-type Ceramic Valve Ball

无阀腔、 流线性设计 Linear Design of Valveless Cavity

C型球阀可被视为一段连续的管道，当关闭时，管道被分为两段。阀门内部没有死区。没有超压和阀内介质物料堆积导致的危害。

C-type ball valves can be considered as a continuous pipeline. When closed, the pipeline is divided into two sections. There is no blind spot inside the valve and no harm caused by overpressure and accumulation of medium materials in the valve.



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Regulating Valve, On-off Valve, Ceramic Valve

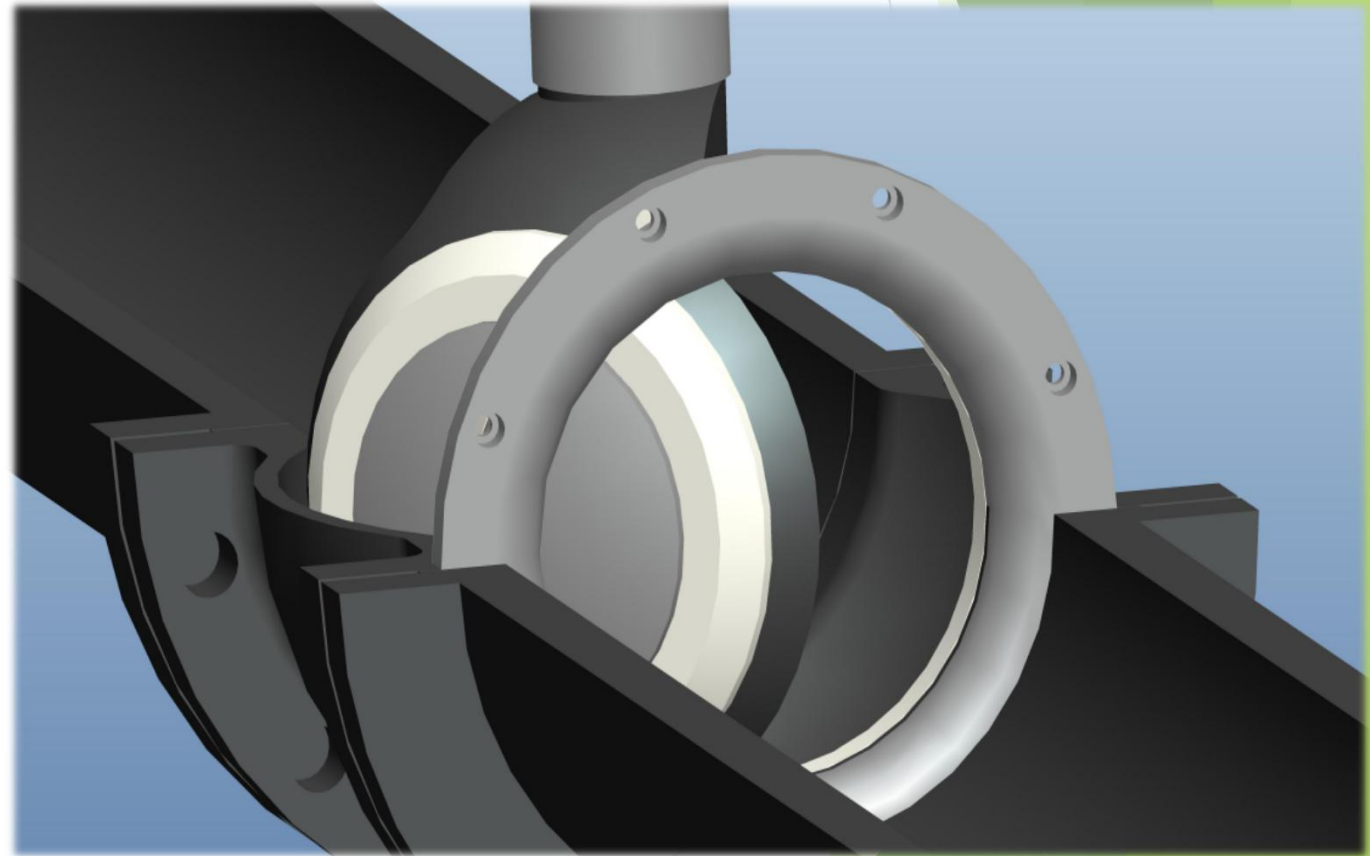
调节阀、 开关阀、 陶瓷阀

C型陶瓷球阀 C-type Ceramic Valve Ball

自清洁功能 Self-cleaning

阀门开启时，C球偏移离阀座，流体沿密封面360度将一些物料及杂物冲洗干净，阀门关闭时，C球相对阀座渐入运动，可实现对密封副上粘附物料及杂物的剪切，保证密封副的清洁。

When valve is opened, the C-ball deviates from the seat, and fluid flushes some materials and sundries along the sealing surface 360°. When valve is closed, the C-ball moves gradually relative to the seat, shearing the adhering materials and sundries on the sealing pair to ensure the cleanliness.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

C型陶瓷球阀 C-type Ceramic Valve Ball

上下支承轴定位 Positioning upper and lower support shafts

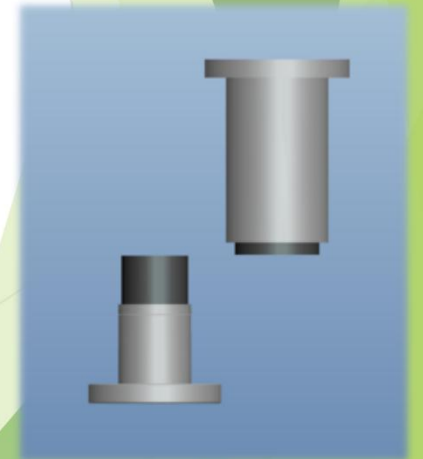
C球采用上下支承轴定位的结构设计，支承轴与阀体静配合，不会产生C球的倾斜，阀杆设置在上支承轴内部，介质对C球的推力由上下支撑轴承受，阀杆仅传递球阀启闭扭矩。

The C-ball is positioned by the upper and lower supporting axes, supporting axle and valve body cooperate statically so that the inclination of the C-ball will not occur. Stem is set inside the upper supporting axle, thrust of medium on the C-ball is borne by upper and lower supporting bearings, and stem only transmits the opening and closing torque of the valve ball.

上/下支承轴的耐磨处理 Wear Resistance of Upper/Lower Shaft

上下支撑轴与C球接触的部位均喷焊镍基合金，提高强度及耐磨性，确保长时间使用也不会磨损，满足阀门频繁动作的要求。

The upper and lower shafts are sprayed with nickel-based alloys at the contact points with C- ball to improve strength and wear resistance, to ensure long-term use without damage, and meet the requirements of frequent valve operation.



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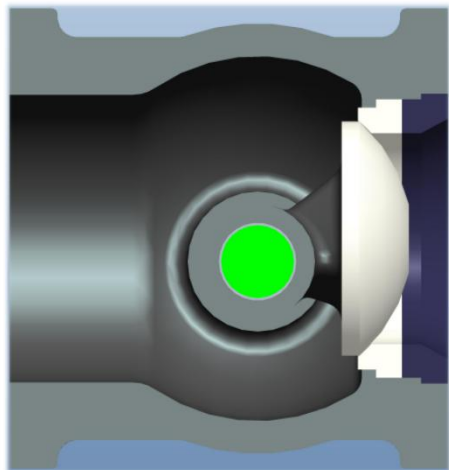
SUN YE H

Regulating Valve, On-off Valve, Ceramic Valve

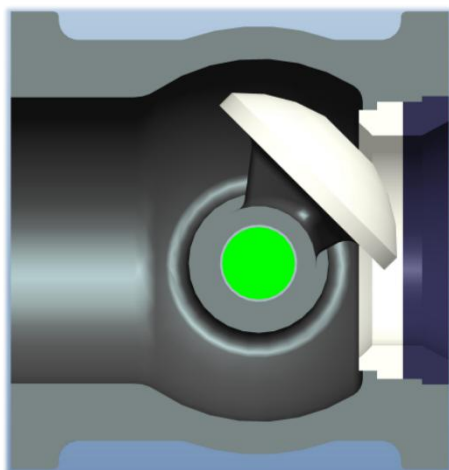
调节阀、 开关阀、 陶瓷阀

山野陶瓷阀940T系列 940T Ceramic Ball Valve 专利号Patent No. : M551671

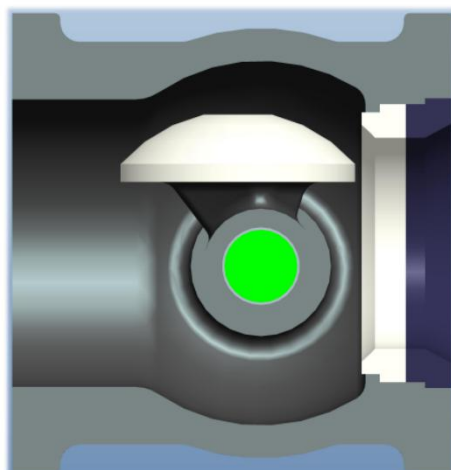
山野940T陶瓷偏芯旋转球阀系列，设计型式为双偏芯设计，扭矩密封。利用双偏芯产生凸轮楔紧效应，实现扭矩密封，关闭时凸轮球相对阀座渐入运动，越关越紧，硬密封泄漏等级达到VI，是典型的球面面密封；山野陶瓷偏芯旋转阀，由于其阀芯的旋转轨迹呈凸轮曲线状，故又称凸轮挠曲阀；阀体采用一体式结构设计，单阀座，通轴设计，具有耐磨损、耐冲刷、耐高温及防挤碎的功能。具有切断/调节等多重功能，可在含有磨料固含量和含纤维质流体、料浆类的介质中起节流调节控制作用。



关 closed



50% open



开 full-opened

940T Ceramic Eccentric Rotary Valve Series with double eccentric design, torque sealing. Using double eccentric to produce cam wedge tightening effect to realize torque sealing. When closing, the C-type ball moves gradually relative to the seat, the tighter the clearance is, and the leakage grade of hard seal reaches VI. It is a typical spherical seal. And, it has functions of cut-off and adjusting; It can regulate and control throttling in slurry medium with abrasive solid content, fibrous fluid, high viscosity and scale-prone slurry.

山野控制阀集团有限公司



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野陶瓷阀950T系列 950T Ceramic Butterfly Valve 专利号Patent No. : 201820909864.9



山野全内衬蝶阀，采用对夹式结构设计，具有耐冲刷、耐腐蚀、耐高温及防挤碎的性能；此款蝶阀，设计为固定流向，阀板设计在阀体的三分之一处，进口端短而出口端长，出口端流道长约为进口端的两倍，充分利用流体力学原理，有效保护阀门在过小流量调节时高流速对于阀后管道的冲刷。内衬套管材料可以是精密陶瓷，也可以是稀有金属，还可以非金属材料。

It is full-lined Butterfly Valve, designed with a pair of clamps, which have the properties of erosion resistance, corrosion resistance, high temperature resistance and crushing resistance. The liner bushing material can be precise ceramics, rare metals or non-metallic materials. It is fixed flow direction, valve plate is designed at one third of the valve body, and outlet end runner length is about twice as long as the inlet end. By fully utilizing the principle of hydrodynamics protect the back pipe from the erosion of the high velocity medium.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野陶瓷阀970T系列 970T Ceramic Angle Valve [专利号Patent No. : 201821048781.1](#)

山野970T全衬型精密陶瓷角阀系列，设计型式为陶瓷内衬柱塞阀，具有调节线性好、寿命长、耐冲刷、耐腐蚀、耐高温、克服介质导动冲击等多重功能，可在严苛腐蚀工况含固的腐蚀性介质中起节流调节控制作用。

Sun Yeh 970T Full-lined Precise Ceramic Angle Valve series, ceramic-lined plunger valve, has multiple functions such as good regulation linearity, long service life, erosion resistance, corrosion resistance, high temperature resistance, and overcoming medium-driven impact. It can play a throttling control role in corrosive medium with solid under severe corrosion conditions.



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山野高性能调节阀介绍 High-performance Regulating Valve



山野的调节阀荣获台湾精品奖，高性能的多级弹簧薄膜运行系统的设计合为一体；例如蒸气、水、油、气体等相匹配的阀芯设计及高性能的运行。

Sun Yeh's Regulating Valves have won the Taiwan Excellent Prize for its high performance and multi-stage spring film operation system design, such as steam, water, oil, gas matching valve core design and high performance operation.

阀内件也可以是陶瓷件。

Valve internals can also be ceramic.



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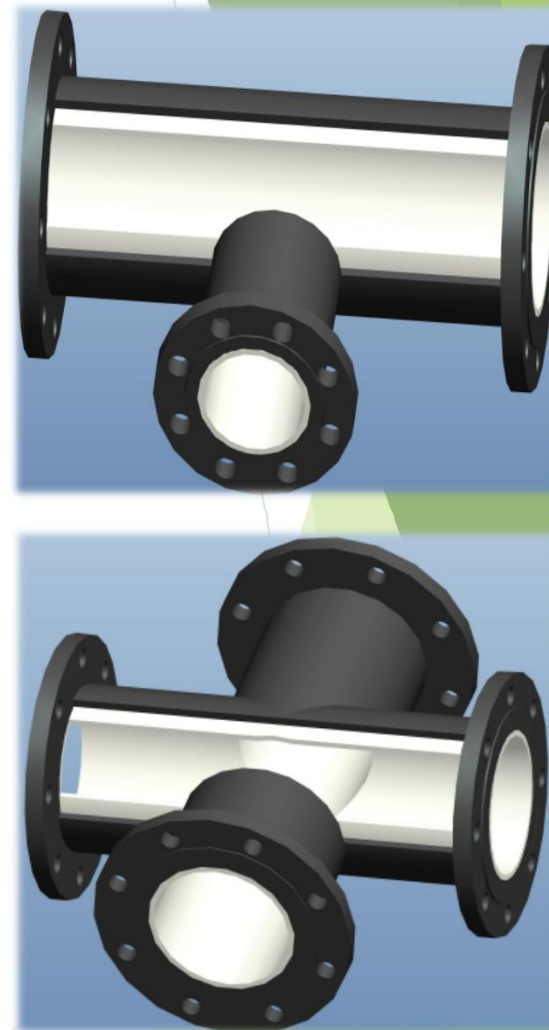
Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

山野陶瓷耐磨管道件设计介绍 Ceramic Pipe Fittings

耐磨陶瓷管道件是由钢管件内衬精密陶瓷组成，具有耐磨、耐蚀、耐热性能、是输送砂、石、煤粉、灰渣、铝液等高磨削、高腐蚀介质物料的理想产品；具有抗磨损能力高，抗含固介质冲刷，使用寿命长。

Wear-resistant ceramic pipe fittings are composed of precise ceramics lined with steel pipe fittings. They have wear resistance, corrosion resistance and heat resistance. They are ideal products for conveying materials with high grinding and corrosion media, such as sand, stone, coal powder, ash and liquid aluminium and have long service life.



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Regulating Valve, On-off Valve, Ceramic Valve

调节阀、 开关阀、 陶瓷阀

SUN YE H山野品牌---山野集团

SUN YE H BRAND---SUN YE H GROUP

山野控制阀集团有限公司的核心竞争力

Core Competitiveness of Sun Yeh Control Valve Group Co., Ltd.

以陶瓷超硬无机材料衬在仪表控制阀内，应对解决介质冲刷、腐蚀，提高控制阀耐用性并延长使用寿命：

The ceramic superhard inorganic material is lined in the instrument control valve to solve the problems of erosion and corrosion, improve the durability of the control valve and prolong its service life:

- A、山野是仪表控制阀类细分领域陶瓷内衬仪表阀最多品类制造的供应商
Sun Yeh is the largest supplier of ceramic lined instrument valves in the field of instrument control valves subdivision
- B、保证硬密封金属球阀零泄漏
Guarantee zero leakage of hard-sealed metal ball valves
- C、严苛工况解决方案
Solutions to Strict Working Conditions
- D、目前自有知识产权特阀实用新型包括外观专利8项
At present, there are 8 patents for special valves of intellectual property rights, including appearance patents

需求决定发展，请大家多多给予山野高端仪表特阀应用的机会

Demands boost development. Please give more opportunities for Sun Yeh high-end instrument special valves

山野控制阀集团有限公司



市场验证 Market Validation

- 目前，陶瓷阀运用于火力发电厂、钢铁、石油、化工、造纸、生物工程、等行业。适用于锅炉蒸气、石灰浆液、含颗粒海水输送、高硬度颗粒、含软颗粒又带腐蚀性介质、粉末、烟气脱硫、排灰、排渣、给水处理。依用途更换材料,可用于不同温度和介质中。
- At present, ceramic valves are used in thermal power plants, steel, petroleum, chemical industry, paper making, biological engineering, and other industries. It is suitable for conveying boiler steam, lime slurry, seawater containing particles, high hardness particles, soft particles with corrosive medium, powder, flue gas desulfurization, ash removal, slag removal and water treatment. The material of ceramic valves can be changed according to different working conditions.



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Regulating Valve, On-off Valve, Ceramic Valve

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目前在**纯碱**行业中的直接供货业绩

Supply performance in **soda ash** industry

- 目前我国纯碱生产企业共计有35家，其中，氨碱法11家，联碱法23家，天然碱法1家。
- There are 35 soda production enterprises in China, of which 11 are ammonia-alkali process, 23 are combined alkali process and 1 is natural alkali process.
- 氨碱法：9家企业成功应用，他们是：广东南碱，山东海化，山东海天，昆仑碱业，青海发投，连云港碱厂，五彩碱业，盐湖镁业，内蒙古吉兰泰。
- Ammonia-alkali process: 9 enterprises have been successfully applied, they are: Guangdong Nan-alkali, Shandong Haihua, Shandong Haitian, Kunlun alkali industry, Qinghai Fatou, Lianyungang alkali plant, colorful alkali industry, Salt Lake magnesium industry, Inner Mongolia Jilantai.
- 联碱法：天津永利化工1家。
- Alkali process: Tianjin Yongli Chemical Company.
- 应用：碳化塔石灰乳，盐泥，冷氨盐水泵出口，热氨盐水泵出口，热母液，氨水罐。
- Application: Carbonation tower lime milk, salt mud, cold ammonia salt water pump outlet, hot ammonia salt water pump outlet, hot mother liquor, ammonia water tank.

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目前在**煤化工**行业中的直接供货业绩

Supply performance in **coal chemical** industry

- 目前对接上神华，中煤，兖矿等大型煤化集团的应用。
- At present, we have connected with the application of Shenhua Group, China National Coal Group, Yancon Group and other large-scale coalification groups.
- 河南能源化工集团（开祥、综能、气化厂），陕西长青能源化工有限公司，河南龙宇煤化工有限公司。
- Henan Energy and Chemical Group (Kaixiang, Full Energy, Gasification Plant), Shaanxi Changqing Energy and Chemical Co., Ltd., Henan Longyu Coal Chemical Co., Ltd.
- 应用工况：水煤浆，油煤浆，洗涤塔，飞灰，末煤，渣水，黑水，渣水循环泵，低压灰水，合成气，催化剂，真空闪蒸罐液位调节。
- Working conditions: coal water slurry, coal oil slurry, scrubbing tower, fly ash, end coal, slag water, black water, slag water circulating pump, low pressure ash water, syngas, catalyst, liquid level adjustment of vacuum flash tank.

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目前在**炼化、 油气**行业中的直接供货业绩

Supply performance in **refining and petroleum** industry

- 目前山野已是中石化，中化总，中海油，台湾台塑入网企业。
- Sun Yeh has gained access to the networks of Sinopec, Sinochem, CNOOC and EPCG_EC.
- 山东海化炼化一体化，无棣鑫岳燃化，大庆油田，泰能燃气。
- Shandong Haihua Refining and Chemical Integration, Wudi Xinyue Burning, Daqing Oilfield and Taineng Gas.
- 应用工况：汽油，柴油，天然气，进料。
- Working conditions: gasoline, diesel, natural gas and feeding.

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目前在**氯碱**行业中的直接供货业绩
Supply performance in **chlor-alkali** industry

- 山野是新疆中泰化学，山东鲁泰化学，山东海化，青岛海湾化学的分供方。
- Sun Yeh is the supplier of Xinjiang Zhongtai Chemistry, Shandong Lutai Chemistry, Shandong Haihua and Qingdao Bay Chemistry.

- 滨化集团。
- Binhua Group.

- 应用工况：电石料浆，渣泵口，烧碱，稳定剂，分散剂，液氯，盐水，母液。
- Working conditions: carbide slurry, Slag Pump mouth, caustic soda, stabilizer, dispersant, liquid chlorine, brine and mother liquor.

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目前在**多晶硅**行业中的直接供货业绩

Supply performance in **polysilicon** industry

- 徐州中能硅业，亚洲硅业，四川永祥，内蒙古通威，新疆协鑫。
- Zhongneng Xuzhou Silicon Industry, Asia Silicon Industry, Yongxiang of Sichuan, Tongwei of Inner Mongolia and Xiexin of Xinjiang.
- 应用工况：气力送料，反应炉进出料，颗粒硅制程全系统，氯化氢制程，氯硅碗，滤渣出口，进高温高压料仓，尾气。
- Work conditions: pneumatic feeding, reactor feeding and discharging, particulate silicon process, hydrogen chloride process, silicon chloride bowl, filter residue outlet, high temperature and high pressure bin and tail gas.
- 有机硅采用金属硬密封球阀较多，如果采用陶瓷密封金属阀，性价比更高。
- Organosilicon often apply for Metal Hard-sealed Ball Valve, but if apply for Ceramic-sealed Metal Valve will more cost-effective.

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目前在**精细化工**行业中的直接供货业绩
Supply performance in fine chemical industry

- 巴斯夫颜料，青岛双桃，法国罗地亚，赢创化学，美国达拉斯，润丰化工，浙江龙胜，潍坊绿霸，四川金象，四川艾氟。
- Basf Pigments, Qingdao Shuangtao, Rodia, France, Wingchuang Chemistry, Dallas, Runfeng Chemicals, Longsheng, Zhejiang, Weifang Luba, Sichuan Jinxiang and Sichuan Aifu.
- 应用工况：硫酸氨，活性炭，酸性气，废水，投料，发烟硫酸+盐酸尾气，醋酸。
- Working conditions: ammonia sulfate, activated carbon, acid gas, waste water, feeding, fuming sulfuric acid + hydrochloric acid tail gas and acetic acid.

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目前在**钛白粉**行业中的直接供货业绩

Supply performance in **TiO₂** industry

- 氯化法 钛白业绩：中信钛业，四川龙蟒集团。
•Chloride Process：CITIC Titanium Industry and Sichuan Longmang Group.
- 硫酸法 钛白业绩：四川龙蟒集团，攀枝花钛都化工3万吨，云南大互通钛业10万吨，昆明东昊钛业4万吨，攀枝花正源科技5万吨，广西蓝星大华8万吨，攀枝花海峰鑫6万吨。
•Sulphate process：Sichuan Longmang Group, Panzhihua Titanium Du Chemical Industry 30,000 tons, Yunnan Datong Titanium Industry 100,000 tons, Kunming Donghao Titanium Industry 40,000 tons, Panzhihua Zhengyuan Science and Technology 50,000 tons, Guangxi Bluestar Dahua 80,000 tons and Panzhihua Haifeng Xin 60,000 tons.
- 应用工况：打钛白浆料，袋滤气，下料，原料下料，氯化炉送料，高钛渣。
•Working conditions: Titanium dioxide beating paste, bag filter, feeding, raw material feeding, chlorination furnace feeding and high titanium slag.

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目前在**医药、食品、饮料业**的直接业绩
Supply performance in **pharmaceutical, food and beverage** industry

- 青岛啤酒，可口可乐，山东鲁花集团，双鲸药业。
• Tsingtao Beer, Coca-Cola, Shandong Luhua Group, Shuangjing Pharmaceutical Industry.
- 应用工况：原料输送，二氧化碳，氨气。
• Working conditions: raw material transportation, carbon dioxide and ammonia.

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目前在**车辆、 船舶、 兵器制造**的直接业绩
Supply performance in **vehicle, ship and weapon manufacturing** industry

- 中国中车，北船重工。
- CRRC, CSIC.

- 应用工况：蒸汽，自来水，天然气，海水。
- Working conditions: steam, tap-water, natural gas and seawater.

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目前在冶金行业的直接业绩
Supply performance in **metallurgical** industry

- 青岛特殊钢，江苏省沙钢集团淮钢，六安钢铁，河北鑫达钢铁，唐山正丰钢铁，日照宝祥新材料
- Qingdao Special Steel, Jiangsu Shagang Group Huai Steel, Lu'an Steel, Hebei Xinda Steel, Tangshan Zhengfeng Steel and Rizhao Baoxiang New Materials
- 应用工况：喷煤，排渣，下料，渣水，碳料输送，输灰，废酸槽。
- Working conditions: coal injection, slag discharge, blanking, slag water, carbon transportation, ash transportation and waste acid tank.

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山野家族成员 list of Sun Yeh Products

- 电气动执行器 Electric& Pneumatic Actuators
- 单座套筒调节阀 Single-seat sleeve control Valve
- 高性能球阀 High Performance Ball Valve
- 高性能蝶阀 High Performance Butterfly Valve
- 衬里阀门 Lining Valve
- 陶瓷角行程控制阀 Ceramic Angle Travel Control Valve
- 陶瓷直行程控制阀 Ceramic Direct Travel Control Valve
- 稀有金属锆镍、钛等特阀 Rare metal valves such as zirconium, nickel and titanium
- 截止阀 Globe Valve
- 闸阀 Gate Valve
- 旋塞阀 Plug Valve
- 止回阀 Check Valve
- 疏水阀 Drain Valve
- 陶瓷管道件 Ceramic Pipe Fittings
- Y型角座阀 Y-port Angle Seat Valve



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- 山野集团不单单陶瓷控制阀做得好，山野还有很多金属阀也是行业中的翘楚，由于时间关系我就不在这里一一介绍。
- Sun Yeh Group not only does a good job of ceramic control valves, but also metal valves. Because of the short time, I will not introduce them here one by one.
- 需求促进高端智造的发展，请大家多多给予山野验证产品性能的机会哦！感恩！
- Demands promote the development of high-end intelligent manufacturing. Please give more chances to validate the performance of Sun Yeh products. Thank you all.

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感谢大家的聆听

thank you for your listening

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