

## Sulfur Recovery Unit



The unit is to recover sulfur from the acid gas containing hydrogen sulfide produced in the refining process with appropriate process methods. The advantage is to meet the requirements of product quality, reduce corrosion, and achieve long-term safe production of the unit with clean production, turning harm into profit, turning waste into treasure, reducing pollution, protecting the environment.

### Challenges

Sulfur recovery unit uses  $H_2S$  as raw material to produce sulfur, so  $H_2S$  in sulfur recovery unit is a widely distributed and in high concentration.  $H_2S$  is toxic, corrosive and with process high temperature, making serious threats to the instruments and the health of personnel.

### Products

- **UHC Magnetic Level Gauge**

UHC magnetic level gauge provides a safer, more reliable and more visible option than conventional glass level gauge. The float moves up and down with the change of level, and the float transmits the level signal through the coupling magnetic field, which divides into the local indication type and the remote transmission output type.

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Chamber and float have a variety of materials and pressure-grade options and are suitable for complex process applications of current major operating devices.

### **Features**

1. The float adopts 304,316 L, TA2 and TC4 material. It has good temperature resistance and can reach to 450°C.
2. The welding process meets the requirements of PED welding process. The chamber is made of 304,316 L. The maximum pressure can reach to 26 MPa.
3. Local indicator type and remote output type with level alarm are optional.
4. According to customer requirements, through a variety of production types, the products can be applied to a variety of working conditions.

### ● **ZTD Displacer Level (Interface) Transmitter**

ZTD displacer level (interface) transmitter is an intelligent level measuring instrument with international leading level independently developed by DDTOP after many years of technical research. The simple buoyancy principle is used to detect the change of level, and then the magnetic signal is converted into a stable 4-20mA current signal and output through the torque tube assembly and the hall sensor. The instrument has a variety of configurations and pressure levels, which are suitable for various applications.

Equipped with DLT9010 level controller, output 4~20mA current signal. At the same time, it has HART communication protocol, which can query, configure, calibrate or test level controller. It can also accept the information of a single measurement loop and transmit the information from site to the control system.

### **Features**

1. SIL2 certification certified by both French Bureau Veritas and Shanghai SITIIS.
2. Verification is not needed, only configuration is needed.
3. The product provides 4-20 mA with HART, and can be configured, calibrated and diagnosed on site using the 475 Communicator.
4. Comprehensive fault diagnosis, warning and status history.
5. EU PED pressure vessel certification, the applicable pressure can be up to 42MPa
6. Maximum process temperature which is applicable in non-vapor condition can be up to 500°C.
7. Flame-proof and Intrinsic safety certified by CSA, ATEX and IEC.
8. The transmitter can be converted arbitrarily in 8 positions without affecting the on-site use.
9. It is suitable for interface measurement and density measurement.
10. EU EMC directive CE certification.

### ● **LG ORIFICE PLATE**

Flow element, also known as differential pressure flow meter, consists of a primary

detection piece (flow element) and a secondary device (differential pressure transmitter and flow indicator). Flow element is the most stable and reliable of all flow meters, which has a history of more than 100 years. Its wide applicability, high reliability and accurate accuracy make it widely used in the measurement of gas, liquid and vapor.

Standard Orifice Plate: LG orifice plate with simple structure, easy installation, stable performance, high measurement accuracy is used in modern industry liquid, vapor and gas flow measurement. It is in line with GB/T2624-2006, ISO5167-1-2003, BS1042-1989, American Society for Mechanical Engineering standard and so on.

### **Features**

1. Structure is simple, easy to install, reliable to work, accuracy can meet the needs of engineering survey.
2. It has pure mechanical structure, according to the site high temperature and high pressure conditions to select appropriate structure and material. The highest pressure is 42 MPa and the highest temperature is 500°C.
3. Flow element has a long history of use, it has rich and reliable experimental data. Design and processing has been standardized. Standard orifice plate is no need to carry out the real flow calibration and maintenance.

## ● **LG VENTURI FLOW METERS**

Flow element, also known as differential pressure flow meter, consists of a primary detection piece (flow element) and a secondary device (differential pressure transmitter and flow indicator). Flow element is the most stable and reliable of all flow meters, which has a history of more than 100 years. Its wide applicability, high reliability and accurate accuracy make it widely used in the measurement of gas, liquid and vapor.

Standard Venturi Flow Meter: LG venturi flow meter has the characteristics of high precision, stable performance and low pressure loss, especially suitable for energy saving work and has the advantages of accurate measurement and reducing the energy consumption.

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## ● LG NOZZLE

Flow element, also known as differential pressure flow meter, consists of a primary detection piece (flow element) and a secondary device (differential pressure transmitter and flow indicator). Flow element is the most stable and reliable of all flow meters, which has a history of more than 100 years. Its wide applicability, high reliability and accurate accuracy make it widely used in the measurement of gas, liquid and vapor.

LG nozzle is the oldest and most widely used flow measuring instrument, which can be used in the flow measurement of liquid, vapor and gas in modern industry. It can meet requirements of GB/T2624-2006, ISO5167-1-2003, BS1042-1989 and American Mechanical Engineering Association standards, etc. According to AQSIC 2018 Document No.515 for power plant boiler flow meter requirements, Dandong Top Electronics Instrument (Group) Co., Ltd is the first enterprise in Northeast China which obtains the pressure pipe components production qualification. All power plant boiler flow meters produced by Dandong Top Electronics Instrument (Group) Co., Ltd are all in the design of original, material procurement, manufacturing of all links by the pot inspection institute supervision and inspection to ensure product quality.

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## ● ULB Type Glass Level Gauge

ULB Type glass level gauge is a local indicating instrument produced according to the principle of connector. The medium in the container was led to the glass level gauge, and the actual height of level can be read from the transparent glass. Cylinder type glass level gauge is a large-diameter glass level gauge, which is suitable for medium with high viscosity or strong bubbles. For low-temperature medium, glass level gauge can use anti-frost fins. Using the temperature gradient principle, add anti-frost fins on both sides of the window, and observe the liquid level through the anti-frost fins.

### **Features**

1. Glass level gauge are all installed with safety steel balls. If the glass level gauge breaks accidentally, under the effect of the pressure difference, the steel ball seals the valve port, blocking the passage of the medium into the glass level gauge.

2. The glass level gauge can realize the measurement of high temperature, high pressure, high temperature and high pressure working conditions.
3. When the medium is vapor, alkali liquor, and PH>7, add mica pads between the glass plate and the sealing pad to protect the glass plate from corrosion by the medium.

### ● **ULG Glass Tube Level Gauge**

ULG-S type double color quartz glass tube level gauge is made according to the principle of light reflection and refraction. The liquid phase in the quartz glass tube is green and the gas phase is red. It is a clear and intuitive display, good quality with competitive price local indicator instrument.

#### **Features**

1. Visual display, clear and eye-catching;
2. Stainless steel housing, novel and beautiful;
3. Simple structure, loose flange connection;
4. Good sealing, reliable work, easy installation and maintenance
5. The glass tube is made of borosilicate glass or quartz glass tube that is resistant to harsh environment, and is resistant to the temperature, pressure and corrosion.

### ● **LGV V-CONE FLOW METER**

LGV V-cone flow meter is the second generation inner cone flow meter. It is a good performance differential pressure flow meter developed by Dandong Top Electronics Instrument (Group) Co., Ltd in cooperation with Tianjin University. The unique support and taper angle design enables it to measure the flow rate of various medium such as gas, liquid and vapor under very short straight pipe section conditions.

#### **Features**

1. LGV V-cone flow meter carries on a lot of experimental research according to different equivalent diameter ratio and different front and rear cone angles, and finally determines the optimal combination of front and rear cone angles under different diameter ratio, which makes the range ratio wider and the measurement accuracy higher.
2. The method of cone fixation with support is adopted, which makes the cone fixation very firm and reliable, and reduces the influence of cone vibration on measurement. At the same time, the influence of the front and rear support on the flow field is also fully considered. Ensure the measurement accuracy.
3. The influence of coefficient of expandability  $\epsilon$  on gas flow measurement is fully considered in the design of LGV V-cone flow meter. The real flow experiment of expansion coefficient is carried out by using the standard device of gas flow rate

of sonic nozzle with positive pressure method.

4. With a wide range, LGV V-cone flow meter is throttled based on the gradual contraction mode of the side wall, which makes the vortex interference in the whole negative pressure region well suppressed, and the measurement effect on the static pressure becomes very small, even in a very small flow state, a very high signal-to-noise ratio can be obtained, so that the measurement can be carried out normally.
5. LGV V-cone flow meter has a special sidewall throttle structure, which has the function of rectifying the fluid flow state, so it only needs very short straight pipe section, the first 3 D and the second 2 D.
6. Small pressure loss which is beneficial to energy saving. The structural characteristic of LGV V-cone flow meter is streamlined throttle, so its pressure loss is small (about 1/3 of the orifice plate), so it has a great advantage to measure the flow rate of those low pressure and large flow fluids.
7. GV V-cone flow meter has the boundary layer effect formed by the special structure, so that the key parts of the throttle will not be worn out, so it can keep the geometry constant for a long time and it can work stably for a long time without calibration. Meanwhile, the flow meter has no movable parts (without any electronic devices), it is a pure mechanical body, so it is resistant to high temperature, high pressure, corrosion and vibration.

#### ● **LGP Balanced Flow Meter(Multi-Hole Orifice Flow Meter)**

LGP balanced flow meter is a flow element developed on the basis of standard orifice plate. Its sensor is a porous disk throttling rectifier mounted on the section of the pipe. Size and distribution of each hole are customized based on test data and become function holes. The balanced flow meter sensor can realize the fluid balance measurement skillfully, obviously reduces the eddy current formation, reduces the dead effect and the fluid kinetic energy loss.

##### **Features**

1. High accuracy.
2. Low requirement of straight pipe section, in most cases the straight pipe section can be as small as 0.5 D~2 D, a large number of straight pipe sections can be saved by using LGP balanced flow meter.
3. Low permanent pressure loss and the differential pressure value is not reduced under the same measuring condition, the permanent pressure loss can be reduced by  $\frac{1}{2}$   $\frac{1}{3}$ .
4. Wide range ratio.
5. Good repeatability and long-term stability.
6. Wide range of application, can measure the gas-liquid two-phase, slurry and even solid particle. The balanced flow meter measures the complete symmetry of the left and right of flow element, so the bidirectional flow can be measured.

## ● **LGY Compact Orifice Plate Flow Meter**

LGY compact orifice plate flow meter is composed of flow element, differential pressure transmitter, three-way manifold, temperature sensor and pressure sensor, which can measure liquid, gas, vapor and other medium.

### **Features**

1. LGY compact orifice plate flow meter has advantages of compact structure, simple installation and can save a lot of installation working time.
2. All products are assembled in the factory to ensure accuracy stable and consistent.
3. LGY compact orifice plate flow meter use imported differential pressure transmitter, the flow element implements the national standards and the actual measurement accuracy is determined by the standard flow inspection device.
4. LGY compact orifice plate flow meter has temperature and pressure compensation algorithm to improve the measurement accuracy.

## ● **UFZ Buoy Level Gauge**

UFZ type buoy level gauge is suitable for level measurement of groove, tank, oil depots and other containers in the storage and transportation system of petrochemical industry. The measured medium can be acidic, alkaline, high viscosity and corrosive medium.

### **Features**

The buoy level gauge has strong structure, and intuitive reading functions. Buoy level gauge is more suitable for many tanks with strong corrosion, high viscosity and general tank area.