Parallel Loading arm with steam jacked heating system and Picture

SULPHUR LOADING ARMS

APPLICATION

Molten / Liquid Sulphur is loaded to a road tanker or rail wagon via a top hatch located on top of the tank. At **Emco Wheaton**, the safe and efficient loading of sulphur is the key. We specialize in designing and manufacturing custom-built molten/liquid sulphur top loading arms.

HEATING SOLUTION

Emco Wheaton offers various heating solutions such as steam jacketed and electrical heat tracing. Based on **Emco Wheaton's** extensive experience worldwide and feedback from our customers, **Emco Wheaton's** preferred solution is steam jacketed tracing.

VAPOUR RECOVERY: (H2S)

Sulphur loading emits **Hydrogen Sulphide Gas** (H2S) when loaded in a tanker/ rail wagon. During the loading process, vapour is recovered and vented to the atmosphere through a stack or an incinerator. Emco loading arms are equipped with a vapour recovery line that utilizes a hose or a rigid pipeline. Based on our experience we would recommend you use a rigid pipeline as the pipeline can be heated and no sulphur particles would stick to the pipe's surface.

When hoses are not properly heated, they become stiff, and can not be properly aligned along the loading arm. This makes the maneuvering of the loading arm difficult. This situation presents a high risk of sulphur particles getting crystallized inside the hose and eventually blocking or damaging the hose.

WHAT IS SULPHUR LOADING?

Sulphur Loading is a very critical application due to its physical properties and very sensitive temperature variations

The temperature needs to be maintained between 126ºC-155ºC for the sulphur to be in molten form to be smoothly loaded in the tanker/rail wagon. If the temperature rises above 160ºC, sulphur viscosity increases making sulphur not fluid enough to load in the tank. If the temperature goes below 120ºC, the sulphur freezes and gets solidified which results in blockage of the loading arm, piping, etc. Since the sulphur is a very poor conductor of heat, once solidified, it is very difficult to melt. For this reason, a loading arm requires a continuous heating solution to maintain temperature during the loading process.

Parallel Loading arm with Electrical heating system

VOLUME CONTROL AND OVERFILL SAFETY

The sulphur loading volume is controlled via a weighing scale or metering. In general, a weighing scale is a preferred solution as a primary shutoff. An overfill probe is installed on the drop tube of the loading arms as a secondary shutoff to avoid any over spillage in case the weighing scale/metering fails to shut off the valve. The secondary overfill device signals are connected to the Emco control system which can also shut off the valve.

Sulphur tankers or rail wagons normally do not have overfill protection, however **Emco Wheaton** loading arms are equipped with an electronic overfill probe; either a tuning fork or a capacitance type., Based on customer requirements, we can include two probes for the HHL and HL loading arms.

MANOEUVRING OF LOADING ARMS: HPU & CONTROL SYSTEM

Safe operation of the loading arm is very important due to its heated surface and the steam around the loading station. Since loading arms are heavy due to steam jacketing and the vapour cone, we recommend maneuvering loading arms by way of hydraulic actuation. **Emco** provides a **Hydraulic Power Pack** to operate the loading arms.

We provide a **PLC** based power pack combined with the control system to monitor and control the loading arm & loading process. The control system receives input signals from the overfill probe, grounding device, parking sensors, temperature sensors, and loading valve (shut off) positions. The system provides one permissive load signal to operate the pump and loading valve. The system can also provide or replicate the signals to the customer's DCS.

The control panel includes status lamps, pushbuttons, emergency shut down and alarm lamps. Also, the control panel can be customised as per customer/project requirements.

CONCLUSION

Handling of molten/liquid sulphur is critical. Monitoring and maintaining the sulphur's operating temperature is the key to selecting the appropriate technology to achieve safe and efficient operation.

Emco Wheaton has extensive experience over a period of **70 years in designing**, engineering, and manufacturing loading arms, We can provide the solution to this critical application.

WE ARE HERE TO HELP

EMCO Wheaton has been a provider of premium, class-leading products and services catering to the **fluid transfer industry** for over 100 years.

With a global footprint and a comprehensive portfolio including a range of:

- **loading arms**
- **bunkering equipment**
- **DRY-BREAK® couplers**
- **tank truck equipment**

EMCO Wheaton is uniquely positioned to help our customers overcome a range of challenges.

COMPLETE RANGE OF LOADING ARMS

TOP LOADING W/ VAPOR RETURN

BOOM TOP LOADERS

BOTTOM LOADING & UNLOADING

- with **safer and spill-free tools** for the transfer of hazardous liquids and gasses
- that comply with the latest g**lobal safety and environmental guidelines**

Our experts and specialists will work with you to make sure that your operation functions safely, reliably, and efficiently.

BRAND YOU CAN TRUST

Our constant pursuit of innovation and engineering excellence helps us to meet and exceed the ever growing demands of the **transportation, oil, gas, and chemical industries** that we serve.

Through a network of **manufacturing facilities, sales offices, and trading partners** we are able to **think globally and act locally**, providing our customers with the knowledge and peace of mind that they are using **the best products**, from one of the world's most well-respected and recognised brands.