



CHEMICAL INJECTION SKID



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Product Introduction

To enhance processing efficiency and prolong the service life of equipment and pipelines, various chemical agents are commonly used in oil and gas development, including demulsifiers, defoamers, corrosion inhibitors, pour point depressants, reverse demulsifiers, and scale inhibitors. The chemical injection system must be capable of storing, mixing, and distributing chemical solutions, as well as precisely injecting them into target systems. Its main equipment includes storage tanks, injection pumps, and associated pipelines and valves.



Key Advantages & Features

Key Challenges	Solutions
Space Constraints, Difficult Layout	Highly Integrated, Space-Saving: Integrates medicine storage, dosing, injection, and control into a single/compact base, significantly saving deck space.
High Offshore Installation Costs and Long Cycles	Pre-fabricated as a Whole, Rapid Deployment: Manufactured and tested onshore, transported and lifted as a complete unit, greatly reducing offshore construction time, risks, and costs.
Requires Precise and Stable Chemical Injection	Professional Control, Accurate Dosing: Utilizes high-precision metering pumps and an automatic control system to ensure accurate dosage and continuous stability, guaranteeing process effectiveness.
Harsh Environment, High Safety and Maintenance Challenges	Safe, Reliable, and Easy to Maintain: Employs corrosion-resistant materials and sealed designs, integrates leakage alarms, explosion-proof features, and modular designs for easy inspection and replacement.
Diverse Processes and Variable Requirements	Flexible Configuration, High Adaptability: Uses standardized modules that allow flexible adjustment of pump head quantity, chemical types, and flow ranges, quickly adapting to different process needs.



Technical Specifications

Item	Specification
Storage Tank Operating Pressure	Atmospheric
Storage Tank Design Pressure	Full of Product/Water or other specified requirements
Main Materials	Carbon Steel (with internal lining/coating), Stainless Steel, or other specified requirements
Storage Tank Volume	Customized
Storage Tank	Equipped with agitators, level gauges, etc
Injection Pump	Diaphragm metering pump or plunger pump or other specified requirements
Injection Flow Rate	0 - 500 L/h (or as specified)
Auxiliary Equipments for Injection Pump	Pulsation dampers, safety relief valves, back pressure valves, Y-type filters, etc
Control Mode	Remote automatic control by PLC/DCS

Composition and Working Principle

The chemical injection system is a reliable metering pump skid comprising diaphragm metering pumps or plunger metering pumps, complete with valves, Y-type strainers, safety relief valves, pressure gauges, pulsation dampeners, chemical storage tanks (with agitators), base frames, access ladders, and other associated auxiliary components.

The system operates by preparing the chemical solution in the mixing tank at the required concentration. After thorough agitation by the mixer, the prepared solution is transferred to the solution tank, from which it is then precisely delivered by the metering pump (dosing pump) to the designated injection point or the specified process system.

The metering pump is equipped with variable frequency drive, enabling fully adjustable and precise flow control from 0 to 100% of rated capacity. The pump head material, diaphragm material, and associated piping materials are all carefully selected based on the specific properties of the chemicals and the process fluid to ensure compatibility and long-term reliability. The MTBF (Mean Time Between Failures) is $\geq 8,000$ hours.

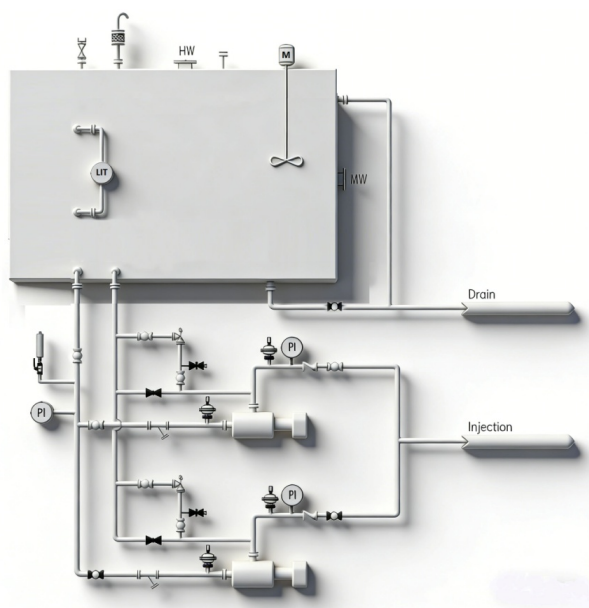


Design Core Points:

- **Compatibility:** All components that come into contact with chemicals must be made of materials compatible with the chemicals to prevent corrosion or contamination.
- **Precision and Reliability:** The accuracy and reliability of the injection pump are critical, typically requiring a metering accuracy of $\pm 1\%$.
- **Safety:** In cases involving high-pressure, toxic, or flammable chemicals, explosion-proof design, leak detection, and pressure protection are essential.
- **Maintainability:** Equipment layout should facilitate operation, observation, maintenance, and component replacement (e.g., filters, diaphragms).
- **Environmental Adaptability:** For outdoor use, considerations must include resistance to salt spray, waves, sunlight, rain, wind, and extreme temperatures in offshore environments.
- **Integration and Scalability:** Standard interfaces should be reserved to facilitate connection with the plant's main control system and future capacity expansion.

Process Flow Diagram

A typical Process Flow Diagram (PFD) for the chemical injection skid is shown below:





Some Products in Factory



Pipelines Pre-installation in factory

Pictures:

