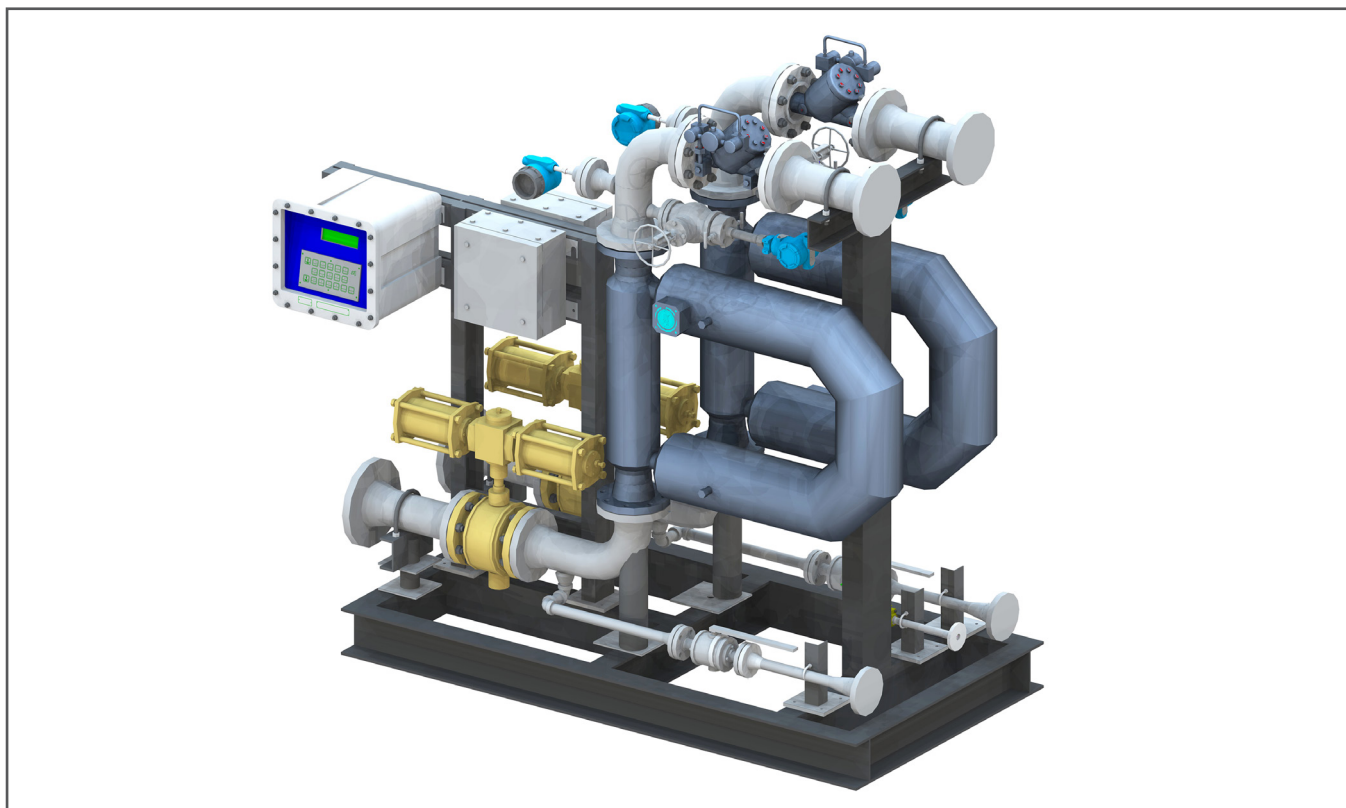


Product Loading System

Total Emerson Loading Solutions



Emerson Product Loading System

Optimized and Modularized

Emerson's Product Loading Systems are the total solution to terminal product transfer. Emerson integrated metering systems are proven to meet the most stringent requirements. Integrated and fully tested metering systems increase measurement accuracy and reliability with the premiere Emerson Precision Flow product line. Modular systems configured for your requirements allow for an optimized terminal layout and an increased truck throughput. For over 40 years, Emerson has provided expertise in engineering, project management, operation, and system services to deliver the safest and highest performance in the industry. Partnering with Emerson ensures a reliable, high quality and safe product loading operation.

System Design

Designed and engineered for product loading applications, the Emerson Product Loading System is the total solution. This system is designed and built on a skid, including all piping and supports and timely transport to the customer's site. The complete package includes:

- Micro Motion Coriolis Elite Flow Meters measure with unparalleled measurement accuracy and reliability
- Rosemount Temperature and Pressure Transmitters allow for correction to reference conditions
- Control valves provide precise flow control
- Remote Automation Solutions DL8000 Preset Controllers monitors inputs and precisely controls the batch quantity per custody transfer requirements
- Strainer with Air Eliminator filters impurities and removes damaging entrained air
- Safety Interlocks and Emergency Shut Down Valves ensure a safe loading environment
- Emerson Prover System validates measurement accuracy
- Quality management backed by ISO 9000, ISO 14000, ISO 18000, ISO 29000

Features and Benefits

Utilizing the world's best flow solutions, Emerson delivers unbeatable performance in a compact and modular design. With Emerson you have single point responsibility for the complete life cycle with system design, project execution, expert consultation and local service, minimizing your risk and ensuring your project success.

Reduce Cost

- Compact, modular system size reduces engineering, fabrication and installation cost with secure shipment in standard closed containers
- Performance reliability reduces maintenance costs
- Sustained fiscal measurement performance and repeatability ensure accurate batch loading

Increase Throughput

- Utilize modular design to optimize terminal bay layout, increasing the throughput of transportation units
- Configure the solutions with metering and loading equipment per your requirements to maintain a reliable, safe and efficient loading operation

Maintain Safety

- Automated loading operations with safety interlocks mitigate loading overfills and minimize risks

Applications

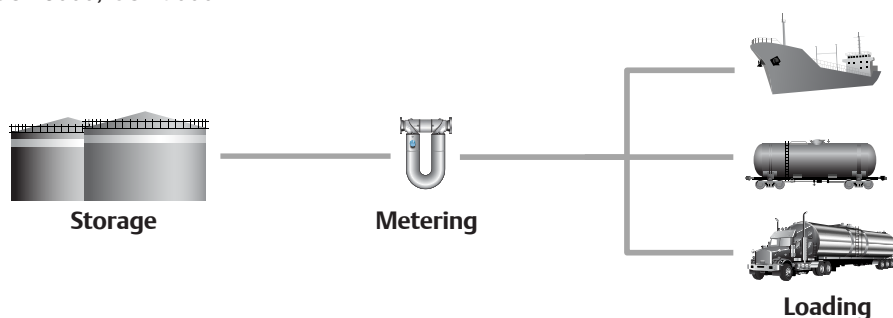
Product transfer for loading applications

Light Hydrocarbon Products

- Including but not limited to: gasoline, diesel, kerosene, jet A1, ship fuel
- Ethanol and biofuel blending

High Vapor Pressure Products

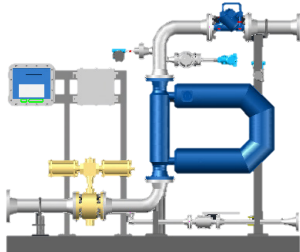
- Including but not limited to: liquefied petroleum gases (LPG), butane, propane, gasoline, liquid ammonia
- Vapor return



System Specifications

Base Solution

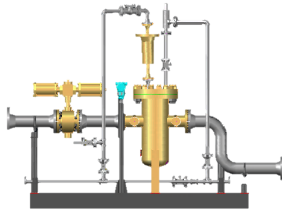
Metering



- Micro Motion ELITE Coriolis meters offer the most accurate and repeatable mass or volumetric measurement for liquids
- Remote Automation Solutions DL8000 Preset Controller
- Control valves
- Rosemount Pressure Transmitter 2051 and Temperature Transmitter 644
- All piping and supports

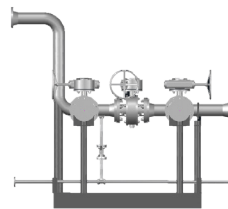
Add-ons

Strainer/Air Elimination



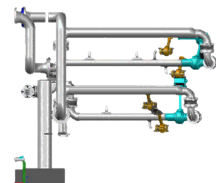
- Strainer with Air eliminator
- Thermal Relief valve
- Emergency Shut Down valve or Isolation valve
- All piping and supports

Proving

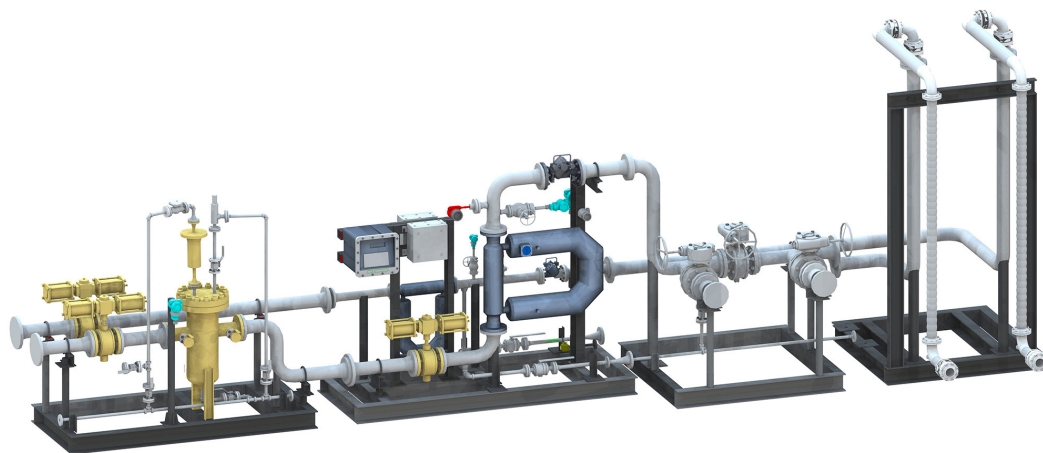


- Prover intake and isolation valves
- Emerson 12" MINI Compact Prover
- All piping and support

Loading



- Bottom loading arm
- Top loading



Configurations

- **2 Product Loading Lines** - 3" or 4", 150# or 300#, connects product header and loading arm
- **Product Loading Line with Blending Line** - 2", 150#, connects product header and product loading line
- **Product Loading Line with Vapor Return Line** - 2", 300#, connects return arm and recirculatory system

Specifications

- Compliance with API Manual of Petroleum Measurement Standards Chapter 5.6 – Measurement of Liquid Hydrocarbons by Coriolis meters
- Supplied as a completed piped, cabled, and instrument package with all piping, cabling and instrumentation
- Installed on a rigid structure for transportation, lifting and operation
- External surface of carbon steel pipe work and all structural steelwork sand blasted and painted per customer's requirements
- Equipment and solution rated for Zone 1 IIA/IIB T3

Loading System Configuration Guide

Customer Name: _____ Location: _____ No. of Solutions: _____

| 1. Product Types (Select all that apply) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|--------------------------|--------|-----------|-----------|--------------------------|--------------------------|--------------------------|---------------|--------------------------|--------------------------|--------------------------|--|--|--|---|--|--|-------------------|--|--|------------------|-------------------------------------|--|--------------------|------------------------------|-----------------------------|-----|------------------------------|-----------------------------|
| Light hydrocarbons: <input type="checkbox"/> Gasoline <input type="checkbox"/> Diesel <input type="checkbox"/> Kerosene <input type="checkbox"/> Jet A1 <input type="checkbox"/> Gas oil <input type="checkbox"/> Other _____ High vapor pressure: <input type="checkbox"/> Liquid petroleum <input type="checkbox"/> Butane <input type="checkbox"/> Propane <input type="checkbox"/> Liquid ammonia <input type="checkbox"/> Other _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Process Conditions | 3. Valves | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| What are the process conditions of the system? Loading line size: _____ Inlet line size: _____ | <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 30%;"></th> <th style="width: 30%; text-align: center;">Electric</th> <th style="width: 30%; text-align: center;">Manual</th> <th style="width: 10%;"></th> </tr> <tr> <td>Isolation</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Prover tie in</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table> | | Electric | Manual | | Isolation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prover tie in | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | |
| | Electric | Manual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Isolation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prover tie in | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 20%;"></th> <th style="width: 20%; text-align: center;">Max</th> <th style="width: 20%; text-align: center;">Normal</th> <th style="width: 20%; text-align: center;">Min</th> </tr> <tr> <td>Flow rate</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operating pressure</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operating temperature</td> <td></td> <td></td> <td></td> </tr> </table> | | Max | Normal | Min | Flow rate | | | | Operating pressure | | | | Operating temperature | | | | <table style="width:100%; border-collapse: collapse;"> <tr style="background-color: #003366; color: white;"> <th colspan="3" style="text-align: left; padding: 5px;">4. Control System</th> </tr> <tr> <td style="padding: 5px;">Batch controller</td> <td style="padding: 5px;"><input type="checkbox"/> RAS DL8000</td> <td style="padding: 5px;"><input type="checkbox"/> MMI Series 3000</td> </tr> <tr> <td style="padding: 5px;">Supervisory system</td> <td style="padding: 5px;"><input type="checkbox"/> Yes</td> <td style="padding: 5px;"><input type="checkbox"/> No</td> </tr> <tr> <td style="padding: 5px;">HMI</td> <td style="padding: 5px;"><input type="checkbox"/> Yes</td> <td style="padding: 5px;"><input type="checkbox"/> No</td> </tr> </table> | | | 4. Control System | | | Batch controller | <input type="checkbox"/> RAS DL8000 | <input type="checkbox"/> MMI Series 3000 | Supervisory system | <input type="checkbox"/> Yes | <input type="checkbox"/> No | HMI | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | Max | Normal | Min | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flow rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating pressure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Control System | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Batch controller | <input type="checkbox"/> RAS DL8000 | <input type="checkbox"/> MMI Series 3000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supervisory system | <input type="checkbox"/> Yes | <input type="checkbox"/> No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HMI | <input type="checkbox"/> Yes | <input type="checkbox"/> No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Solution Configuration | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div style="text-align: center;"> </div> <p style="text-align: center;">Card Reader Indicators ESD Button</p> <p style="text-align: center;">Bay Batch Controller</p> <p style="text-align: center;">Liquid Loading Coriolis Flow Meter Digital Control Valve Earthing Device To Truck</p> <p style="text-align: center;">(Select all that apply) <input type="checkbox"/> EMERGENCY SHUT DOWN VALVE <input type="checkbox"/> STRAINER WITH AIR ELIMINATOR WITH THERMAL RELIEF <input type="checkbox"/> PROVER TIE IN <input type="checkbox"/> LOADING ARM</p> <p style="text-align: center;">OPTIONAL LINE</p> <p style="text-align: center;">(Select one) <input type="checkbox"/> PRODUCT LOADING LINE <input type="checkbox"/> BLENDING LINE <input type="checkbox"/> VAPOR RETURN LINE</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p style="font-size: small;">LIQUID LOADING</p> <p style="font-size: x-small; text-align: right;">TO TRUCK</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p style="font-size: small;">BLENDING</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p style="font-size: small;">Vapor Return</p> <p style="font-size: x-small; text-align: right;">From TRUCK K 150# RF</p> </div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. Optional Line Process Conditions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| What is the product type in this line? _____ | | Loading line size: _____ Inlet line size: _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 20%;"></th> <th style="width: 20%; text-align: center;">Max</th> <th style="width: 20%; text-align: center;">Normal</th> <th style="width: 20%; text-align: center;">Min</th> </tr> <tr> <td>Flow rate</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operating pressure</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Operating temperature</td> <td></td> <td></td> <td></td> </tr> </table> | | Max | Normal | Min | Flow rate | | | | Operating pressure | | | | Operating temperature | | | | What is the approximate pressure rating? <input type="checkbox"/> 150# <input type="checkbox"/> 300# <input type="checkbox"/> Other _____ | | | | | | | | | | | | | | |
| | Max | Normal | Min | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flow rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating pressure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating temperature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |