



**SPARTAN
CONTROLS**

Experience Industrial Innovation



INDUSTRY APPLICATIONS

Truck Loading & Unloading Systems



Turnkey systems simplify installation, operation and maintenance of gas & liquids truck loading and unloading.

Total Package

Safely and efficiently moving liquid products, on and off a truck, can be done accurately and repeatedly when done correctly.

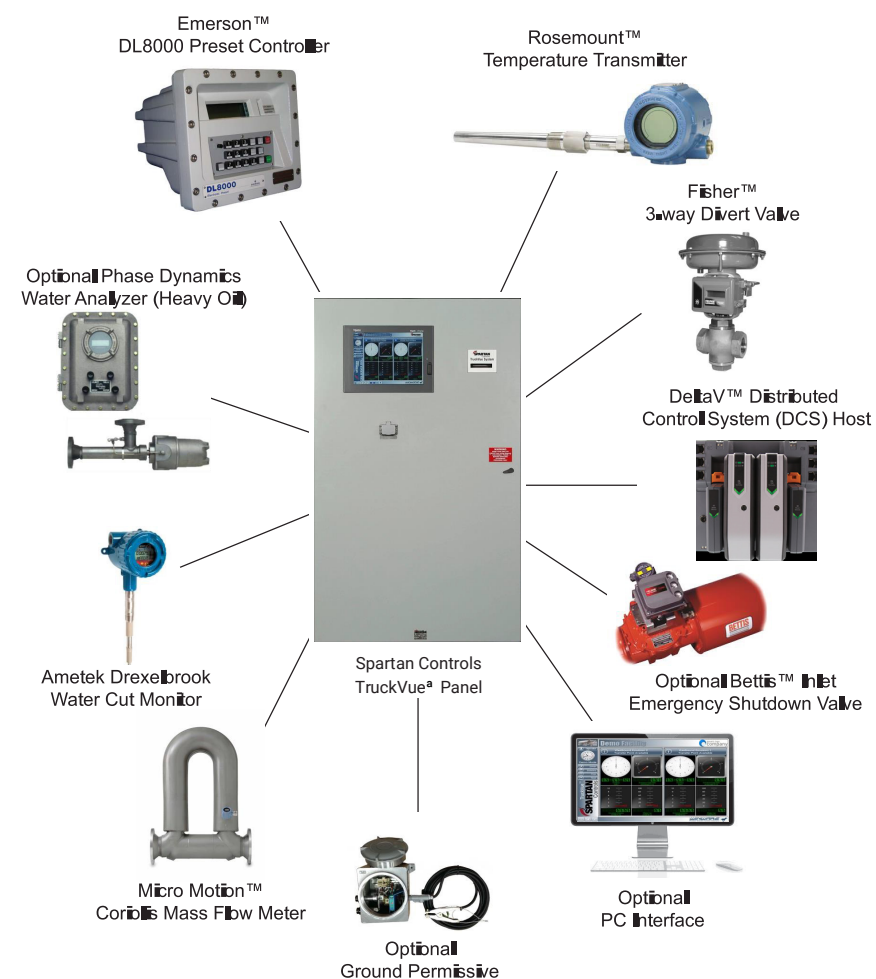
Accurately accounting for total volumes of loaded and offloading product such as emulsions, condensates and NGL's are important. Proper measurement and control allows you to minimize downstream processing costs as well as give an accurate representation of your plant mass balance.

The Spartan Controls Truck Load/Unload package meets these minimum standards and local regulatory requirements. Couple this with our ability to connect remotely, capture data and provide accurate ticket information, the Spartan truck transfer solution is the total package.



Key Features & Benefits

Moving liquid products on and off a truck comes with many different challenges. Our engineered solutions alleviate those challenges by utilizing our expertise, new technology and a proven track record to execute.



Challenges to Consider When Designing a System:

- Accuracy
- Total loaded/unloaded product
- How much oil, water, condensate or NGL
- Product density
- Repeatability, longevity and maintenance

Why Are These Important?

- Ensuring you pay/account for what you get
- Minimize processing for oil and water
- Minimize charges for off spec product
- Achieve density targets
- Meet local regulatory requirements (API, AER Directive 17, SK PNG017 & BC OGC)

Expertise

- Comprehensive application and product knowledge
- Internal expertise to develop standard or custom solutions that meet our Customers needs
- Regulatory compliance
 - Low vapor pressure products
 - Crudes, emulsions, condensates
 - Volume Correction API Chapter 11.1
 - High vapor pressure products
 - Natural gas (NGLs), butane, propane
 - Volume Correction API Chapter 11.2.2
- Piping codes
 - CSA B51, ASME B31.1, CSA Z662
- Electrical codes
 - Canadian Electrical Code

Spartan Advantage

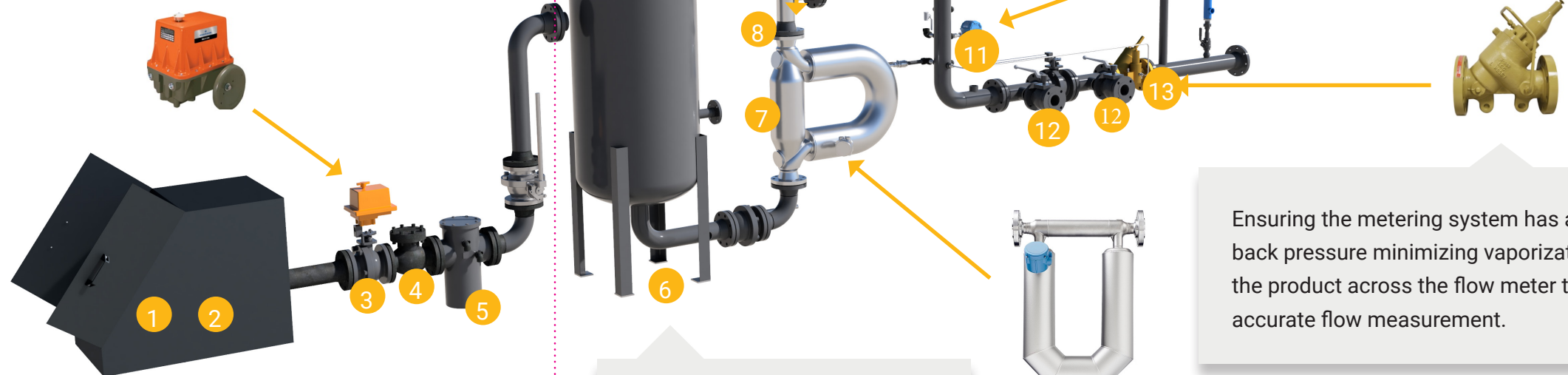
- 30+ yrs of supplying oil and water quality and quantity measurement solutions
- TruckVue™ – complete loading and offloading control system, locally operated by truckers and digitally connected for full data collection and reporting
- Full turnkey options from concept to delivery, or as an integrated resource within our Customers teams contributing to product design, sizing and best practices
- Custom applications and options;
 - Tank level
 - Daniel backpressure control valve
 - Odorant system integration
 - ESD valve output
 - Ground permissive interlock (GPI)

Key Components

1. Camlock connection with drain
2. Enviro box
3. Actuated block valve
4. Check valve
5. Strainer
6. Air eliminator
7. Coriolis mass flow meter
8. Drexelbrook watercut meter
9. Phase Dynamics watercut meter
10. Pressure transmitter
11. Temperature transmitter
12. Proving connection
13. Back pressure valve
14. Liquid alarm switch

Accurate watercut measurement is key to ensure proper volumes of water and oil are recorded. This measurement can be used to minimize oil processing downstream by automatically diverting to the proper tank (ie. sales or slop).

To provide corrected volumes at standard conditions in accordance with API MPMS, Chapter 11.1 and 11.2 temperature measurement is required (pressure as well with compressible fluids).



An envirobox provides a place for a trucker to safely connect their hose which capturing any small leaks or spills preventing them from releasing to the environment.

The air eliminator discharges any gas present in the pipe. This entrained gas could otherwise be measured as part of the flow and result in meter inaccuracy.

Micro Motion coriolis flow meter provides accurate flow and density measurement. This meets the requirement for custody transfer as well as provides a net oil calculation (NOC) measurement using the density measurement.

Notes

Spartan Controls' truck unloading systems have been designed to help oil and gas producers meet the government regulations and have helped customers to improve their plant mass balances with accurate measurement. Specifically, our system meets the requirements as defined in AER Directive 17 in Alberta, Directive PNG017 in Saskatchewan and the OGC in British Columbia.



Oil & Gas Load & Unload



Heavy Oil

- Systems designed for Heavy and Viscous Crude Oils
- Like Molasses, these are oils that are grade 3, 4, 5 and 6 Fuel oils, along with Heavy Marine Fuels



Light Oil

- Grade 1 and 2 fuel oils, diesel fuel and most domestic fuel oils.

Condensate

- Very similar to very light oils, condensate is high on the API scale and yields a lot of lower value LPGs.



Produced Water

- Water that is produced as a byproduct during the extraction of oil natural gas.



LPG

- The most common types of liquified petroleum gas are propane, butane and isobutane, as well as mixtures of all three



Service and Support

Spartan Controls offers unparalleled service and support capabilities for the TruckVue system. Our factory-trained technicians will assist with all commissioning and start-up of the system, from the touchscreen display to the measurement end devices represented by Spartan Controls - all with a single point of contact.



Spartan Controls offers a Preventative Maintenance Agreement (PMA) program that strives to provide the best support and service throughout the lifecycle of the TruckVue™ system. Enrollment to this program provides the site preferred access to customer support, software hot fixes, upgrades, and Spartan's hot spare inventory. PMA also grants members access to request for software re-configurations, providing flexibility for the system to accommodate for any changes to site requirements. Through scheduled site visits, factory-trained technicians can help optimize system performance and extend the life cycle of the hardware by identifying problems early that may affect future system performance or ongoing measurement uncertainty.

All TruckVue system components provided by Spartan Controls are supported and warranted for 18 months from date of shipment, or 12 months from installation. Should you experience a problem with your system, help is just one phone call away, 7 days a week, 24 hours a day, courtesy of our 24/7 program.



Experience Industrial Innovation

Call us or request a quote online 24/7

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