

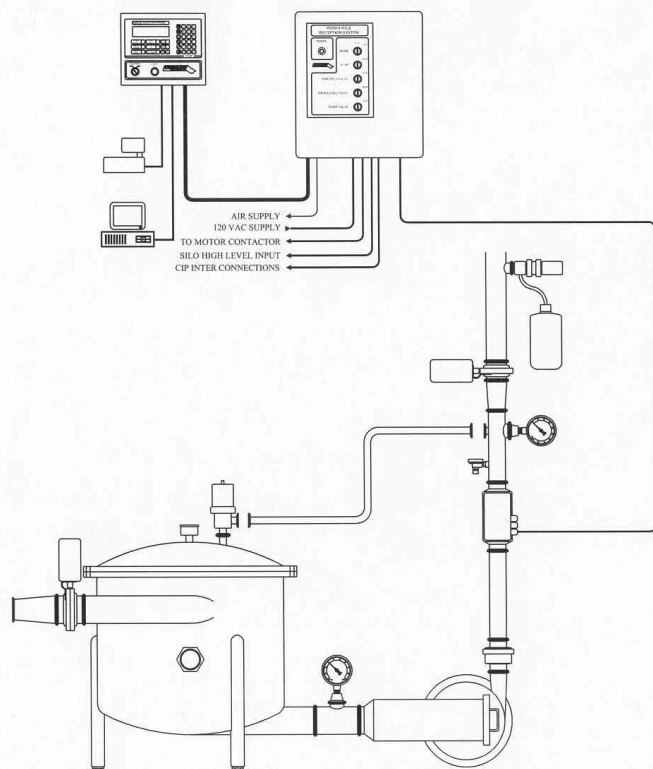
PD5010 Sanitary Reception System

Process Integration and Measurement Solutions

Features:

- Flow rates from 3 to 500 GPM
- Vacuum based air elimination
- Online sampling
- Data acquisition
- Tanker cling recovery
- Ticket printing

The PD5010 receiving system pioneered by Conflow Technologies provides accurate measurement of liquid food products. Certified by Industry Canada Weights and Measures for custody transfer applications, the PD5010 boasts superior accuracy and dependability over conventional truck scale and pressure based systems. Calibration drift due to mechanical metering systems is a thing of the past. Superior measurement and improved product quality is aided through the use of vacuum air elimination. Computer based sampler control ensures accurate component samples regardless of load size. Data acquisition reduces workload for accounting personnel. With single point control and monitoring of the entire receiving process, the PD5010 system is the first step in control of inventory and elimination of plant losses.

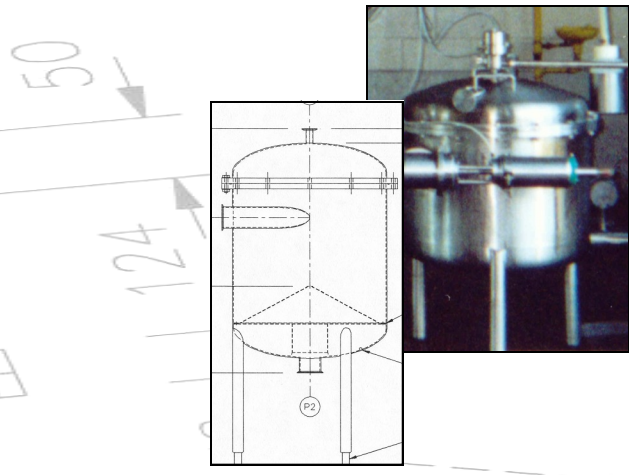


System Operation

The operator is prompted to key in the transporter code, manifest number and the volume on the tanker. If the system is empty, the operator is prompted to press the "prime" key which automatically adds the system prime volume to the total. After pressing the "start" key, the inlet valve and the deaeration valve open. Milk flows by gravity into the air eliminator with the air exiting through the deaeration valve. When the computer senses the air eliminator is full, the pump deaeration valve is closed and the pump ramps up to full speed. The air eliminator has a tangential entry forcing the product to flow to the outside of the vessel wall. Vacuum is created by the pump which helps remove air from the product. Air is stored in the center of the air eliminator. As the volume of stored air increases, it gradually displaces the product in the air eliminator until it reaches a mid level which is sensed through level controls. At this point, the controller ramps the pump down or closes a throttle valve to reduce the flow rate to a point where there is no longer a vacuum present in the air eliminator after which the deaeration valve is opened to allow the stored air to escape.

At the end of the process where the tanker is almost drained, the system will run at slow speed to help facilitate the draining of the tanker. When the tanker can no longer provide product, the pump will continue to pump the product to a low level in the air eliminator at which point it will stop. If more product slowly comes into the air eliminator, the pump will start momentarily in order to fully drain the tanker after which the receiving process is deemed complete.

Upon completion of the receiving process, the operator presses the print key and the transaction is recorded on to a printed ticket. At the same time, the data can be transferred to an in-plant personal computer for accounting purposes.



Vacuum Based Air Elimination

All flow meters regardless of design or principle of operation, require the product to be air free in order to achieve accurate measurement. In many cases especially with dairy products, the quality of the product is affected by air. The concept of vacuum air elimination where the air eliminator is located prior to the pump, was introduced to Canada from Europe in the mid 1980's. Prior to this, most systems used pressure air eliminators which are located after the pump and for the most part are entirely mechanical in design. In many cases these air eliminators were far too small in diameter to be effective and in reality functioned as an oversized air elimination valve so the pump could pick up a prime. In addition, air is compressed under pressure which further compounded the problem of air elimination. Many of these devices are still in use in North America and can function adequately when operating at low flow rates but have failed all Industry Canada Weights and Measures system tests when used on high capacity receiving systems. Vacuum based air eliminators are typically larger in diameter than pressure air eliminators and require external electronic controls to function. The PD5010 controls the entire air elimination process. This is accomplished using precise level control and operating valves and controlling flow rates either with a valve or variable frequency drive.

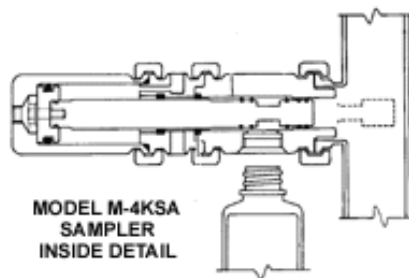
Meter Model	Rating/Size L/min / GPM	Dimensions Inches
PD340A-C25	13-133 / 3-35	1
PD340A-C38	33-633 / 7-87	1½
PD340A-C51	67-667 / 17-176	2
PD340A-C63	133-1333 / 35-350	2½
PD340A-C76	200-2000 / 50-500	3

Sampling

Obtaining accurate samples of raw product is especially important in the dairy industry where not only the volume of milk or cream is purchased or sold but components are also purchased or sold. For this reason, it is vitally important to obtain accurate sampling across the entire load. Because raw milk stratifies, traditional practice has been to agitate the load before receiving it and drawing a sample for component analysis. This method is time consuming and can lead to inaccuracies if insufficient agitation occurs.

An on line sampling device which can extract samples from the milk can ensure accurate samples are extracted and collected for analysis.

The PD5010 computer has sampling parameters which can be programmed to ensure consistent samples are taken regardless the size of the load or the flow rate. Parameters such as sampler volume per stroke, volume desired in the bottle and sample required per volume can be programmed into the computer. When the operator keys in the manifest volume on the tanker, the computer automatically calculates the correct sample to take based on the parameters programmed into the computer as well as the flow rates. This means that a sample can never be compromised due to insufficient agitation nor operator oversight in adjusting an external controller for load size.



Data Acquisition

The PD5010 computer can store up to 250 transactions which can be downloaded to a local PC. The data can be downloaded to databases such as Microsoft Access which can be exported to other PCs throughout the plant via a local area network.

Tanker Cling Recovery

In all cases, it is impossible to recover all of the product from a tanker truck due to cling on the sides of the walls. Over the course of the year, this can result in substantial lost revenues to a processing plant due to un-recovered product and additional use of CIP chemicals. The PD5010 system is equipped to perform "burst rinsing" of the tanker where a predetermined volume of water is pumped through the spray ball and recovered directly into the receiving system. This feature is used extensively in the cheese and juice industry.

Raw materials can constitute up to seventy-five percent of the cost of running a dairy or beverage plant. Inaccurate measurement can have a significant effect on profitability. This translates further into the area of accounting for "in-plant" losses where countless hours have been spent in analyzing potential areas of loss when the plant may have not received the product in the first place.

Conflow Technologies Inc. pioneered the first Industry Canada Weights and Measures approved electro-magnetic based receiving system in 1989 with the introduction of the PD3010 high capacity reception system to the dairy industry. At the heart of the measuring is the Proces-Data PD340A electro-magnetic flow transmitter renowned for its unsurpassed accuracy. In fact, it was the first and remains only one of two electro-magnetic flow meters to be accurate enough to pass stringent Industry Canada Weights and Measures standards. (Approval Number AV2324REV5).

Industry Canada Weights and Measures also requires approval on the computer that controls the system which is only granted upon passing extensive laboratory and field testing. The PD3010 computer was the first and remains the only Fieldbus based computer to meet and surpass their requirements. Using the P-NET based fieldbus standard, the PD3010 underwent many program upgrades over the years as clients requirements demanded. The majority of the originally installed PD3010 computers are still in use today fourteen years later.

In 2001 Conflow Technologies Inc. introduced and received approval for the PD5010 computer. The PD5010 offers twice the processing power of the PD3010 and offers flash ram memory which allows for program upgrades on line.

As with the PD3010, the PD5010 controls the entire receiving process which includes, the pump and variable frequency drive, automatic sampling, temperature monitoring, data collection, product destination and alarm monitoring.

Process Integration and Measurement Solutions

Contact Conflow Technologies to implement the following measurement and process solutions in your plant!

Custody Transfer Specialists

Receiving Systems - Tanker Loading - Tanker Delivery Systems

Custody Transfer: Volumetric and Mass Approvals

Specialty Chemicals

Food and Beverage

Agricultural Product

Dairy Receiving Systems

Alcohol Receiving

Excise Tax - Inventory Management

Process Automation

Fieldbus & PLC based Control Integration

Recipe Managed Blending and Batching

PID, Microprocessor Controllers and Transmitters

Inventory Management and Data Logging

Turn Key - System Integration

System Configuration and Design,

Flow Measurement, Control System, Valve, Pump, Pressure, Air Elimination, Filtration, Level Control, Temperature, Samplers, and Analytical Instruments.

Specialty Solutions

Micro Injection Systems - Portable Sanitary Flow Meters - Diesel Engine Fuel Consumption & Management - Bulk Fuel Management Systems

Plant Services

Flow Meter calibration, validation, proving, test and repair.

Portable master meter rentals ideal for ISO certifications.

Measurement Products

Precision: DC Magnetic, Turbine, PD, Coriolis Mass, and Thermal Mass,

Analytical Instruments, Pressure Transmitters,

RTD and Thermocouple Temperature Transmitters/Sensors, Level,

PID and Microprocessor Controllers,

Paperless Recorders, Indicators and Transmitters.

Serving the:

Food, Beverage and Dairy, Pharmaceutical and Cosmetic,

Agricultural, Mining, Automotive, Plastics, Paint and

Coatings, Specialty Chemical, Refined Fuel and Pipeline Industries

with Pride and Integrity!