Foreword

When you want to build a milk tanker collection and get it MID approved there are a number of considerations that you have to do. In this document we describe PROCES-DATA's advice to you when you are designing your tanker.

To make the

Before building a truck for milk collection etc., it is important to consider what is needed for registering the amounts collected, in an approved and certified way.

This short description is based on a milk collecting truck.

In relation to collecting milk, it is important to separate any air from the milk, before an accurate measure can be performed. An air-eliminator (with /without level-measuring), a pump and a flowmeter are the vital parts of this mechanical setup.

The milk is stored in one or several compartments on the truck.

Data from the different collections must be 'transferred' to the dairy in some way.

Finally the milk shall be pumped out of the compartments again, and the whole system on the truck, must be cleanable.

The system

Central in such a collecting-system, is basically, the air-eliminator, the pump and valves around it, the flow-meter and a computer with a certified MID-system (for measuring and storing measuring-reports), and naturally a compartment, to hold the milk until delivered to a dairy.

PROCES-DATA A/S has a certified MID system, consisting of a Flowtransmitter (PD340), a display and operatior interface (PD688), with a MID approved software, including storage of reception-reports on a sealed SD-card, ready for use. It is possible to include customer software within the same PD688 device.

The air-eliminator and pump must be able to remove all air coming with the milk during pumping, to ensure accurate measure, and avoid measure-faults. It is vital to have this part build in a way so it actually can do its job under all circumstances, and naturally, one way is to reduce the flow in case there is too much air in the received milk, for the eliminator to separate and remove it fully. Measuring the level in the eliminator is one way to detect this.

When receiving the milk, it can be important (/required) to take samples during the reception of the milk, and knowledge of the expected amount of milk to receive, can distribute this sampling in a better way. How this sampling is made mechanically, can be very different, from the operator exchanging bottles at each customer, to the system picking a bottle and putting a label on it with the customer name / ID etc.

The truck may have several compartments, and the control-system may switch between them in a simple or more complex way. Could be that one compartment is for organic milk only, or one of the compartments is for a special dairy, and only milk from selected farmers is to be stored here.

Reports (data) from each milk-collection must somehow be transmitted to the dairy receiving the milk. This may be done in several ways, the simplest is just to send data to the dairy database. Customer reports are stored in the truck control-system, and data is transmitted as milk is delivered to the dairy, or during collection, if it is known which dairy is to receive what milk. Connecting a printer to the system, makes it easy to print collection reports to the farmer, or a summary report for the dairy.
Likewise routes, farmers and their expected amount of milk can in a similar way be loaded from a database on the dairy. The truck control system uses this information, to help the driver during milk collection.

When everything is 'screwed together', also the software, the truck and collecting system as a whole, needs to be certified as well.

Truck-control

Overall control

- Route-control: local / dairy-database
- Compartments: Amount, milk-separation
- Select route
- Select supplier, compartment, amount
- Start with empty / normal air-eliminator – controlling MID
- Sampling during reception
- Reception
- Stop/end reception – controlling MID
- Emptying
- Cleaning
- Draining
- Error-handling

Air eliminator

- Empty and clean
- Filling
- Handling pumping – level
- Pumping paused
- Emptying
- Cleaning
- Emptying
- Error-handling

Data control (remote access / control)

- Sending data to Dairy

- Reading data from Dairy
- Local data storage

MID-integration

- Controlling the MID, and receive status
- Error handling: MID/Flowmater

Printing

- How to print
- What to print
- Graphical / text
- SMS

Visualizations

What to visualize?

- Daily operation
- Cleaning / draining
- System-check / diagnostics / service
- Loggings
- Reports
- Printing
- Devices
- SW-upgrade

User-access

Control, log-in / -out: NFC or code/password. Driver/Operator-groups