

# Liquid chlorine unloading issues solved with Micro Motion Coriolis flowmeter

## RESULTS

- Accurate measurement under biphasic process conditions
- Cost effective compared to weighbridge
- Easier to install and maintain or re-calibrate
- More reliable determination of the “empty” state based on the density drop



## APPLICATION

Solvay Belgium, an international chemical group located in Antwerp, unloads liquid chlorine from a train to be supplied to some major chemical customers. The unloading process is critical because companies have to follow strict environmental laws and safety regulations regarding manual operations.

## CHALLENGE

In the unloading process, Solvay Belgium places the wagon full of liquid chlorine on the weighing bridge where total weight is measured. The loaded liquid chlorine content is calculated when the train arrives at the plant through the BOL (Bill of loading) figures. The liquid chlorine is pushed out of the train wagon by overpressurizing the compartment with nitrogen.

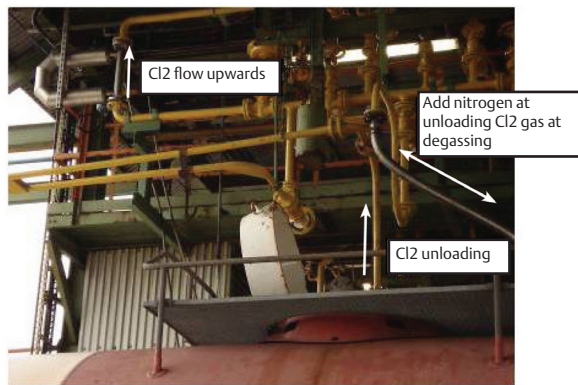
To determine if the wagon is almost empty, the operations workers stand next to the train and listen to the “biphasic flow noise” generated by the unloading. Once the wagon is determined empty, the remaining liquid chlorine has to be removed (at another location) safely. This always occurred at the end of an unloading action.

After years of use, the weighing bridge had to be revised and Solvay Belgium got the opportunity to evaluate a new solution.

## SOLUTION

Solvay Belgium chose to install Emerson’s Micro Motion® ELITE® Coriolis flowmeters (model CMF200H with Alloy C22 wetted parts) with an enhanced core processor and 2700 MVD™ transmitter. The meter was installed following Emerson’s best practices guidelines for biphasic flow (vertical flow upwards with flow velocities over 0.5m/sec) to get a reliable measurement.

[www.micromotion.com](http://www.micromotion.com)



Installation train unloading bay



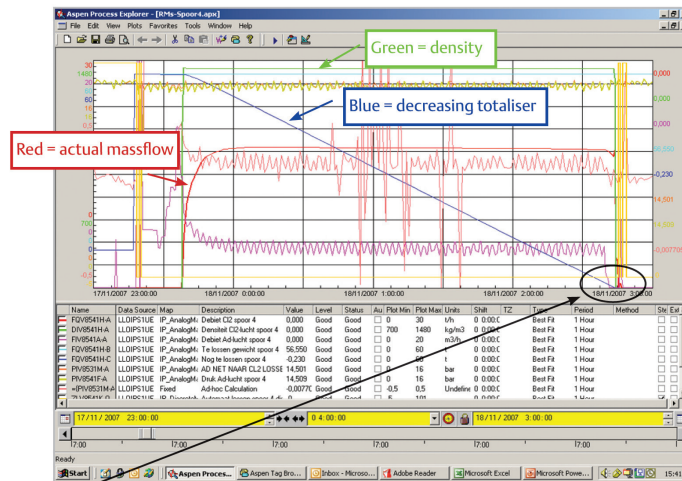
For more information:  
[www.MicroMotion.com/chemical](http://www.MicroMotion.com/chemical)  
[www.MicroMotion.com](http://www.MicroMotion.com)



Solvay Belgium monitored the flow countdown totalizer where the set point was predefined via the BOL figures.

They were also able to measure and monitor mass flow and density. These measurements made it easier for the company to determine if the wagon was completely unloaded. Since the meter's measurement accuracy and repeatable has increased, the availability of the loading bay has been increased because the operator does not need to monitor the operation as closely to determine the end of unloading. The meter has been successfully operating since 2007.

Also, due to the success of this application, the entrained gas problems in the pipeline transfer at Solvay Belgium have been solved using a Micro Motion Coriolis meter.



**Result:** Totalizer = "0" and density drops to low (almost zero) value  
Weighing bridge successfully replaced by Micro Motion Coriolis technology

Trending mass flow, density and countdown totalizer

