

# Coriolis controlled additive dosing

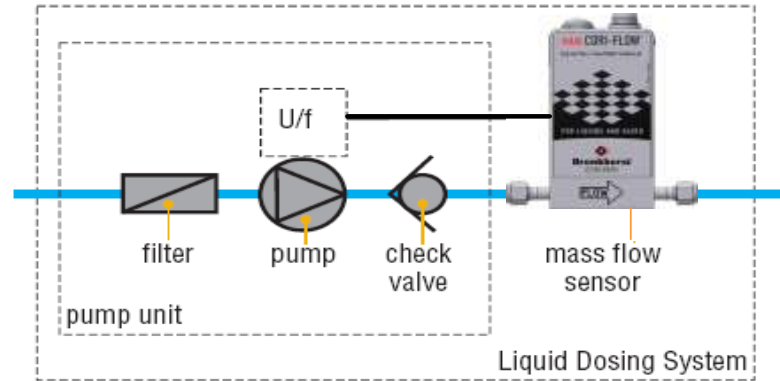
Advantages and applications

Peter Derkzen - Bronkhorst



# Liquid Dosing Systems

Pump control:  
Mini Cori-Flow is directly  
controlling liquid  
gear pump



Complete system for fast and  
highly accurate fluid dosage



# Compact controllers using pumps

## Features/advantages (1):

- No pressurized vessel needed with problems of gas dissolved in liquid
- Continuous flow control
- No external PID-controller required
- Exact filling and dosing using speed controlled pump



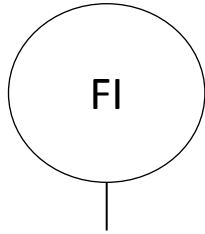
# Compact controllers using pumps

Features/advantages (2):

- Flow is independent of process back pressure and temperature
- Stable pump control also in low flow range
- High rangeability (up to 1:2000, depending on sensor and speed control)
- High stability and fast response flows  
**(stable up to <0.1% of desired flow)**



# Traditional control



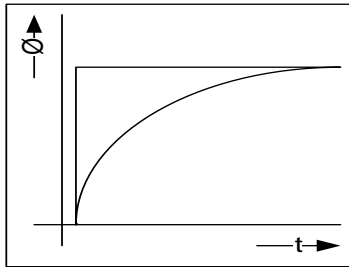
Flow meter



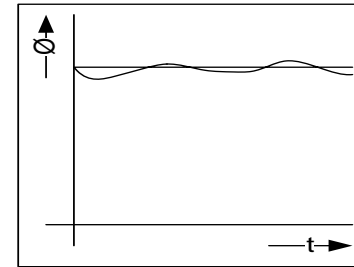
PID-control unit



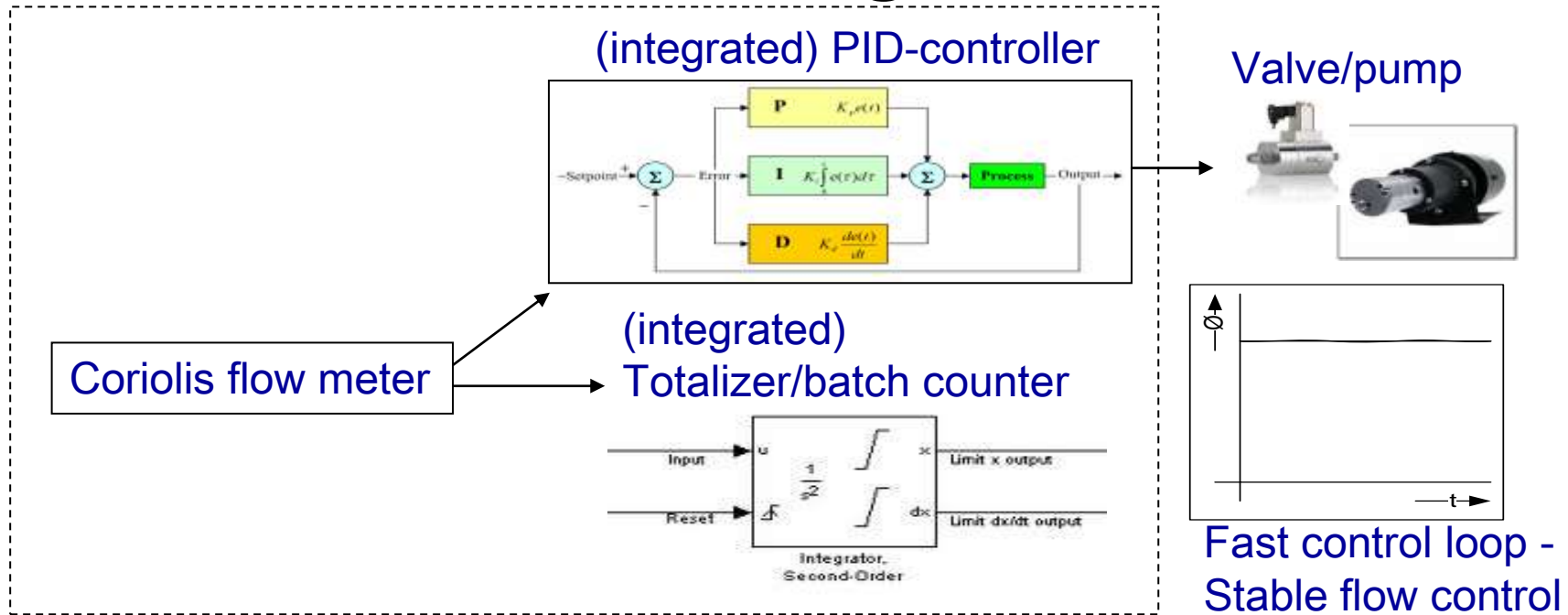
Actuator (valve/pump)



Slow sensor signal  
results in instable  
valve/pump control



# Coriolis with integrated control



# Coriolis (chemical) applications

## Flow Chemistry Reactors

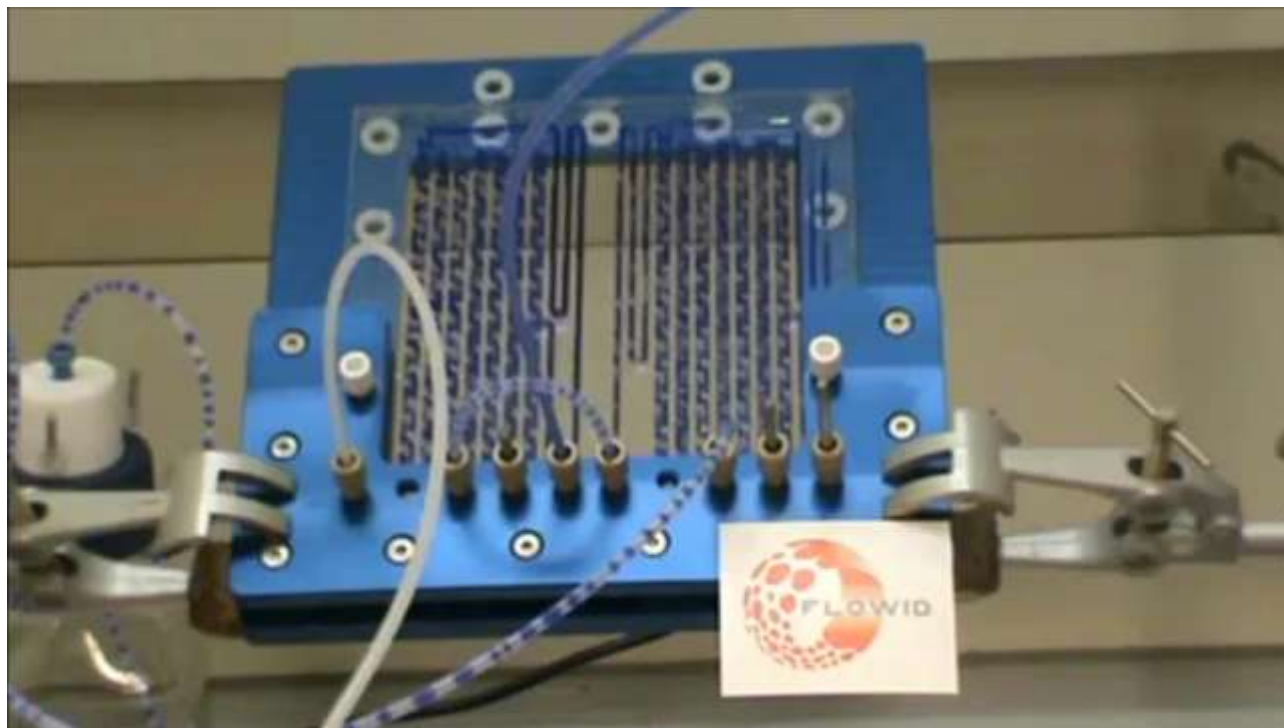
- ◆ Chemical processes which are critical in terms of safety and quality
- ◆ Significant better controllability of these processes due to:
  - A high accuracy and unsurpassed repeatability
  - A very stable control





# Coriolis (chemical) applications

Flow Chemistry Reactor



  
Bronkhorst®

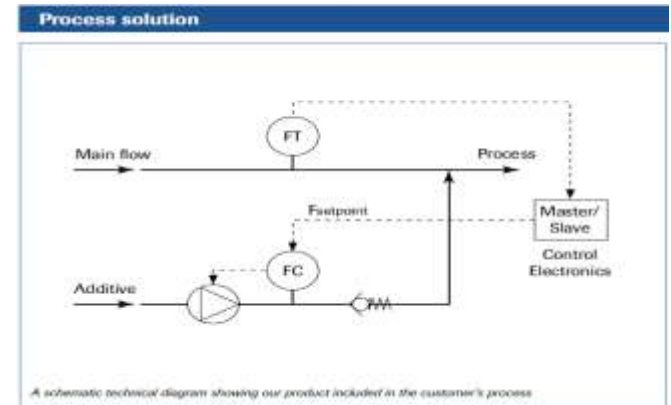
Instrumentatie & Analyse Dagen 2017



# Coriolis (food) application

## Flavoring oat and fruit bars

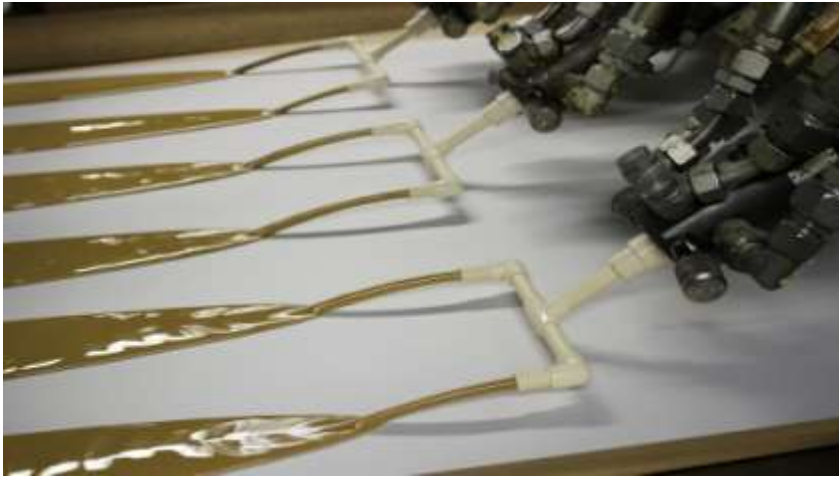
- ◆ Dosing of flavors to oat bars, fruit bars
- ◆ Master/slave configuration
- ◆ Coriolis mass flow meter directly linked to a liquid dosing pump



# Coriolis (process industry) applications

## PU foam

- ◆ Insulation panels for roofs, walls and floors
- ◆ Foam production for car seats



# Coriolis (home care) application

Dosing of concentrated dyes for coloring home care and personal care products



# Coriolis (marine) applications

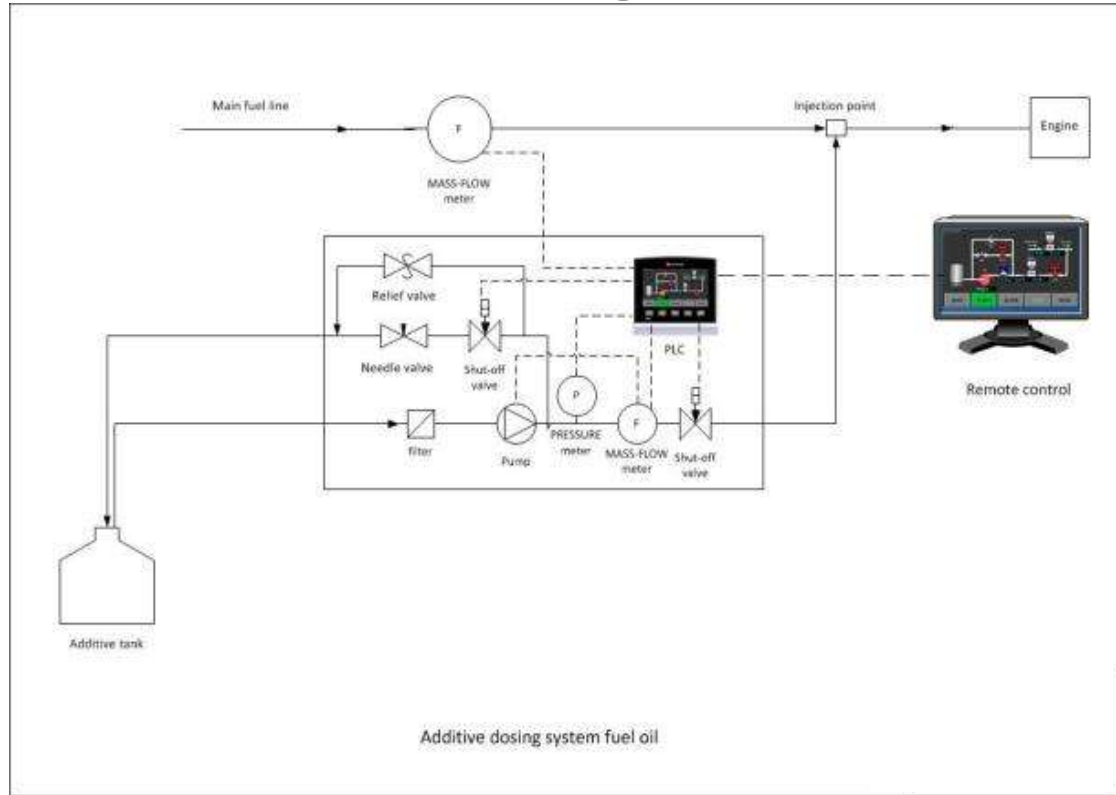
- ◆ Additive dosing into fuel oil for cleaner exhaust & reduction of oil consumption on ships
- ◆ Ballast water treatment
- ◆ LNG gas odourisation





# Marine Additive Dosing Unit

- (Ultra) low liquid flow dosing units
- Stand-alone or
- Easy connection to all kinds of high flow meters for ratio control, using
  - Modbus
  - 4-20 mA or
  - frequency output



# Bronkhorst flow solutions

## Your advantages:

- Highly stable & fast (ultra) low mass flow control for
  - Increased accuracy, repeatability & optimized process conditions
  - Cost reduction of raw materials
- Traceable mass dosage
- Complete customer solutions (incl. alarming, redundancy)
- Easy upgrading of and adding to existing hardware



# Bronkhorst flow solutions

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

**Bronkhorst:**

**Your perfect partner for  
low flow fluidics handling technology**

