

# A075-GP03 - DOSAGE PRÉCIS D'AGENT DE DÉMOULAGE

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APPLICATION NOTE A075-GP03

## ACCURATE DOSING OF RELEASE AGENT

**In their automotive department, a major company manufactures 'skin' that covers a car's dashboard, to give it a 'leather look'. This skin is produced by spraying liquid, coloured polyurethane into a nickel mould.**

To allow an easy skin release from the mould without any damage, prior to spraying the polyurethane, an external release agent has to be applied onto the mould surface. The quantity of this agent determines the 'looks' of the final part - which of course must have the correct homogeneous gloss and colour.

The amount of external release agent is essential in this respect. The skin will remain adhered to the mould when too little agent is applied, whereas too much agent will give glossy spots on the skin. Either way, production loss will occur. Bronkhorst was requested to supply a suitable mass flow controller for the application.



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### Application requirements

In the past, some problems occurred with supplying external release agent using mechanical solutions, such as pressure regulators and gear pumps. These 'old' solutions were not suitable for low flow use and were unstable at low viscosities.

Moreover, their maintenance and calibration costs were high, and the process had to be adjusted continuously by the operator. A new solution to adequately dose external release agent should overcome these problems.

### Important topics

- Accurate dosing of release agent
  - Improved process control
  - Visualisation and alarm settings
  - Process data management
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## Process solution

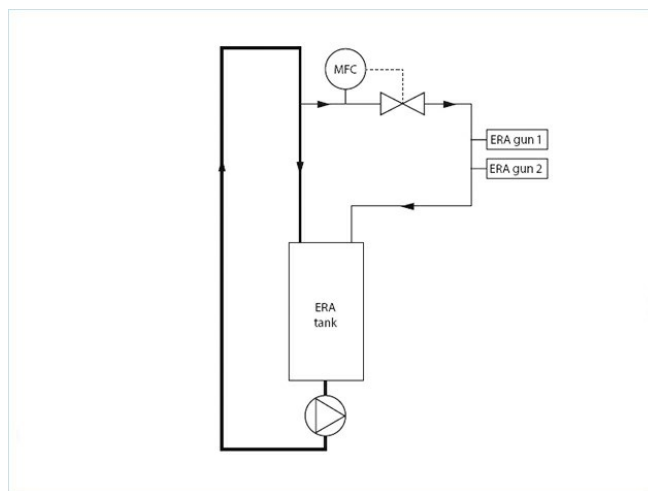
A Bronkhorst Coriolis mass flow controller (series [mini CORI-FLOW M14](#)) combined with a C5I valve forms the basis of the solution to accurately supply external release agent to the nickel mould surface. These compact devices are mounted next to the robot arm that sprays the agent by means of a spray nozzle. The robot arm moves along the surface of the mould, where the required amount of agent is sprayed homogeneously. This setup is being used for waterbased as well as solvent-based release agents.

This solution results in a stable flow, even with low flows of less than 5 grams per minute. Compared to the old solutions, the overall release agent application process stability has been improved, with respect to the colour and gloss of the manufactured car dashboard skin. Also reproducibility is high, as the linear flow curves have the same output for all installations. After change of setpoint, the response time is excellent.

Due to the compactness of the Coriolis mass flow controller (M14) and C5I valve, they are easy to install and integrate in existing installations. Data can be transferred from the flow controller by means of RS232, Profibus and analog outputs. [Control & monitoring](#) allow easy visualisation and data capturing.

This solution meets increased quality demands by OEMs, as real mass flows are being measured and controlled. The downtime necessary for calibration and maintenance is largely reduced.

The customer is very pleased with the unequalled results of the solution, as well as with the preceding engineering and cooperation with Bronkhorst. This is demonstrated by the fact that currently, about 100 combinations of flow controller with C5I valve are being used at the automotive factories worldwide.



Flow scheme

## Recommended Products



### MINI CORI-FLOW™ M14

Débit min. 0,03...1 kg/h  
Débit max. 0,3...30 kg/h  
Pression 200 bar  
Indépendant des propriétés du fluide  
Grande précision



### SERIES C2I, C5I

#### Vannes de régulation pour liquide

Vannes à action directe  
Pression nominale 64/100 bar  
Kv-max:  $6.6 \times 10^{-2}$



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