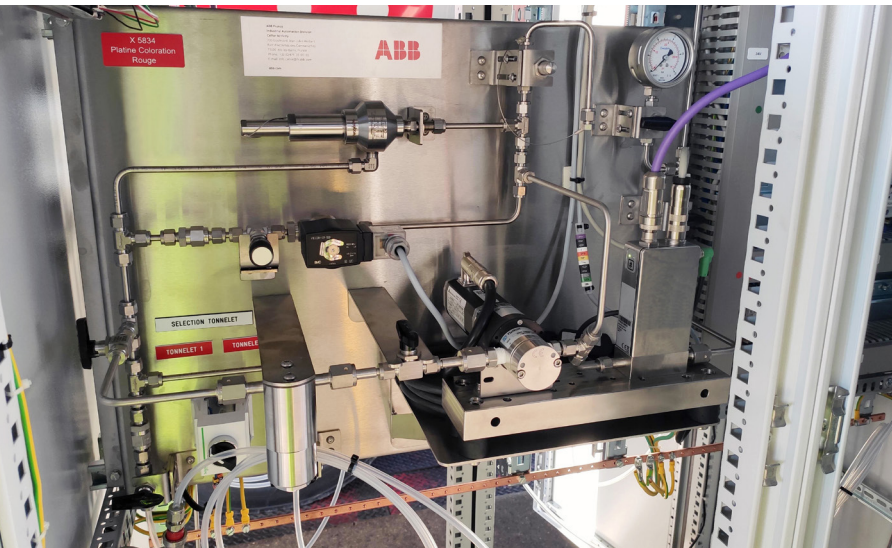


In-Line Colouring System For Lubricants

High accuracy dosing for time and cost savings



The In-Line Colouring System developed by ABB enables the dyeing of lubricants directly during bulk loading operation without any prior dilution of colorants. It guarantees an on-spec coloured product, while reducing energy and space requirements.

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01 Internal view of in-line colouring cabinet with dosing module

In-line versus batch process

The use of dyes, trackers or differentiators to colour lube-oil products according to OEM specifications or marketing needs becomes more and more frequent. The traditional solution consists of a batch process line per colour including one diluting tank, one dedicated circuit with pumps and instrumentation and required time and planification for dilution. By implementing an in-line process, the dyeing of lubricants takes place during the loading operation, with just the required quantity of dye and with pure dye.

Microflowmeter technology

The Coriolis mass flow controller technology makes possible the continuous colouring of lubricants during bulk loading operations by ensuring a constant flow of pure dye starting around 10 grams/h.

High accuracy dosing

The In-Line colouring system ensures a high accuracy dosing at a constant speed for an on-spec end product from the first to the last drop, while minimizing waste of expensive dyes. The injected dye quantity is the real measured one.

Skip the time and energy consuming dyes dilution

The batch operation consisting in diluting dyes in dedicated tanks prior to the loading operation is no longer required, as well as the assets used for it, which are often underutilized.

Automated and real-time control

The in-line colouring system is supplied with a digital screen fitted on the cabinet door so as to enter process parameters and follow them up. The system can also be interfaced to the plant control system for a remote monitoring from the control room, the tracking of performance and consumption data to schedule dye pail refilling as well as the management of parameters, set points and alarms.

Standalone solution

The in-line colouring system is a standalone solution supplied as skid unit for quick installation and startup, for both new or revamp projects.

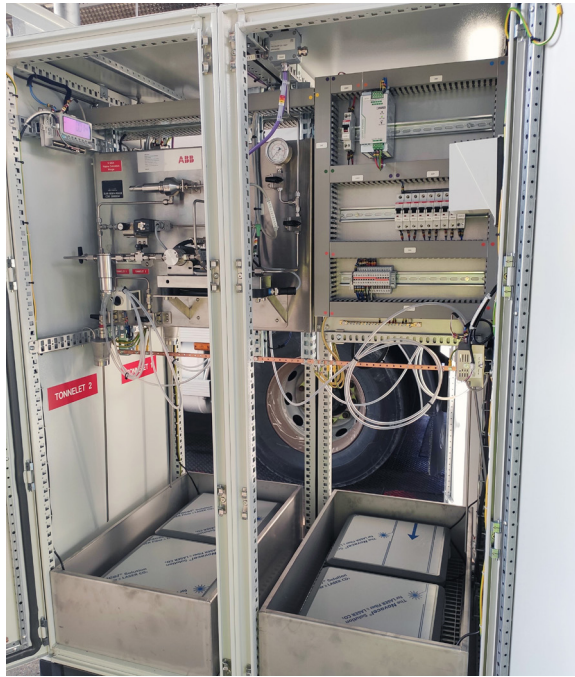
Advantages

- Reduced handling of toxic dyes.
- End product quality and traceability.
- Controlled process with real-time correction and flow adjustment.
- No product waste: only dose what is necessary.
- Reduced operational costs: gain time, save energy.
- Optimized plant assets through reduced space requirement and investment costs.

Applications

- Lubricants bulk loading, drum filling and packaging (under development)
- Any other applications requiring the dosing of small liquid quantities.

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02 Internal view of in-line colouring cabinet, installed at the truck loading gantry with 4 dye pail weighing scales in its lower part



Features and performance

The in-line colouring system consists of a cabinet installed at the loading gantry, and housing:

- one dosing module (micro-flowmeter),
- 2 or 4 dye pails/containers according to needs (2 per dye for a quick change when one is empty),
- weighing scales to monitor dye pail/container-level (not necessary in every case)
- one digital screen fitted on the cabinet door to monitor dyeing operation and enter parameters
- electrical components and PLCs

Dye flowrate range: from 10 g/h up to 30 kg/h.

Injection points are positioned on the existing pipes feeding the loading gantries. Static mixers are installed on these pipes so as to ensure an efficient dispersing of dye into the lubricant.

ABB supply the control system for colouring formula management and the integration in the existing plant control system.

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Success Story

One of our customers used two dedicated swing tanks, pumps and circuits for two coloured end products. We replaced them by our in-line colouring system including two dye injection points, directly installed at the truck loading gantry. Lab tests were successfully carried out. With a loading quantity of 800 kg and a 7 g dye injection, the same colour was obtained from the “beginning to the end” of the loading process (results within average of 3 reference standards).

“With the in-line colouring system, we are able to deliver coloured product on demand without having to plan in advance sufficient quantity of dyed lubricant. Furthermore, we could re-used the old colour tanks to expand our storage capacity without great expense.”



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