

Customised chemical production made fast and easy

How **data** makes setting up multiple formulations batches a quick, **cost-effective** and **risk-free** process.

How do speciality chemical manufacturers stay competitive?

One proven method of securing customer loyalty and growing market share is offering a wide variety of formulations. In other words, fast, accurate and responsive service can keep customers happy and provide that all-important competitive edge.

For the experts¹, this means making every step - from the order stage through to quality assurance - as efficient and accurate as possible.

Here is where digitalisation can help.

Any colour, any batch size

That's been Dulux Australia's experience since the company opened a new, purpose built-production plant (the largest coatings factory in Australia and New Zealand) in Merrifield, near Melbourne². The company built two plants under one roof: a blend-and-tint (BAT) plant for small batches and a mass production plant for high volume paints.

The Merrifield plant is a case study in success for Chemical Industry 4.0.

By working with Siemens to implement a highly-automated digitalised system that brings together all chemical plant processes within a single, highly-integrated control system, Dulux has:

- Optimised manufacturing efficiency, while balancing multi-formulation demand and load across multiple production lines.
- Total control of production.

This means that manufacturing is as efficient and cost-effective for the smallest and most specialised order - even in a batch size of one - as it is for a typically large standard production run.

Batch size no object

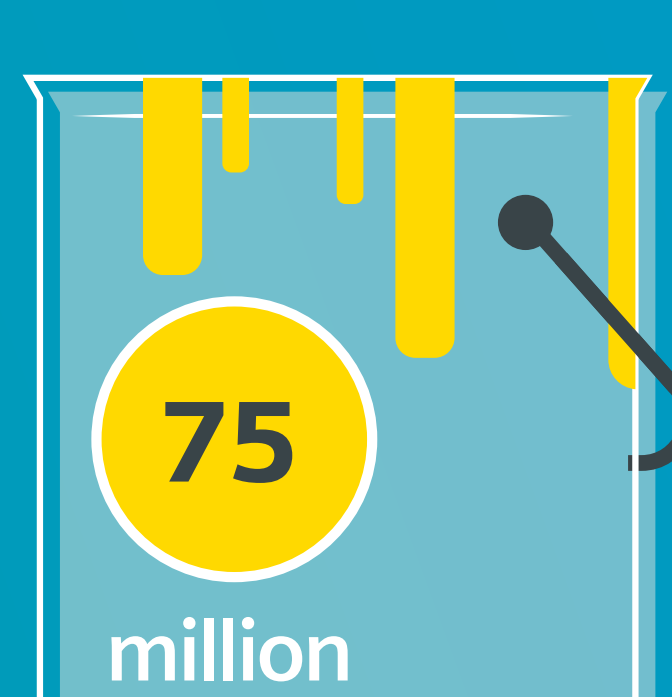
The Merrifield plant produces approximately 75 million litres of paint every year.

It's not unusual for the Merrifield plant to be asked to produce a special order for one pallet of paint (100 litres).



Advanced **automation** and **digitalisation** have allowed Dulux to design a paint production process that can deliver the highest quality paint consistently, faster than ever before and with flexibility that allows incredible market responsiveness.

Michael Freyny, Executive General Manager for the Digital Factory and Process Industries and Drives divisions, Siemens Australia

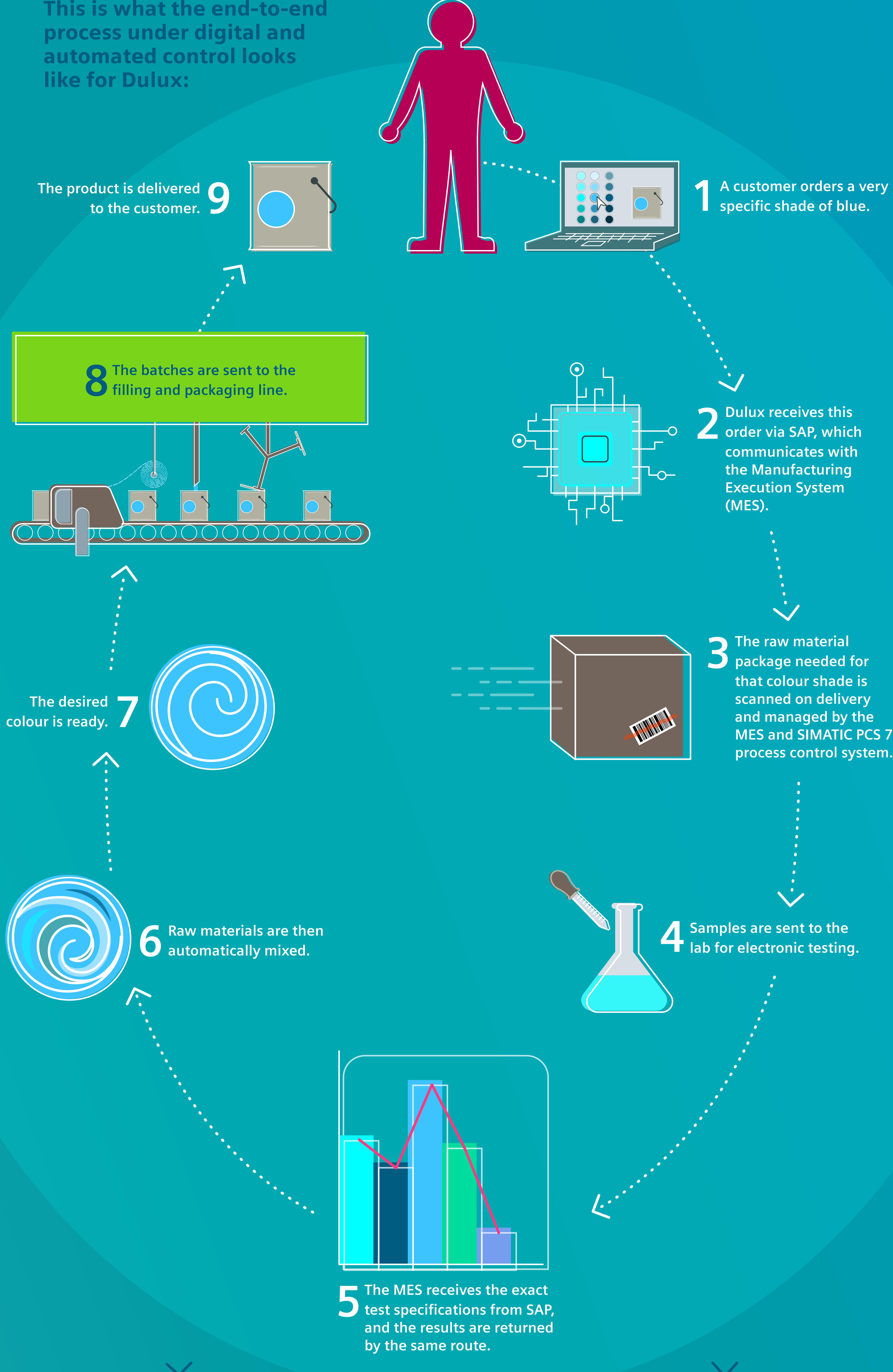


We have incredible manufacturing flexibility where we can produce speciality paint batches 1/50th of the size than previously possible in our other plant. This means we can respond to market demands quickly without carrying excess stock.

Michael Freyny, Executive General Manager for the Digital Factory and Process Industries and Drives divisions, Siemens Australia

Dulux estimates that, for small batches, the end-to-end manufacturing process is eight times faster than previously possible.

This is what the end-to-end process under digital and automated control looks like for Dulux:



A transparent, connected digital ecosystem

Manufacturing is completely transparent because the entire production process is integrated horizontally and vertically, allowing for the end-to-end digitalisation of the plant.

Speed through simulation

Dulux used Siemens' simulation platform SIMIT before the plan went live to:

- Commission and carry out comprehensive tests of plant equipment and automation while construction was underway.
- Provide a realistic training environment for operators.



True automation reduces energy consumption



We're able to virtually eliminate manual interventions - reducing from approximately 75,000 per annum - giving us repeatability and pin-point accuracy with our recipes to ensure the highest quality paint with minimal raw material waste. This has also led to a 25 percent reduction in energy consumption.

Kevin Worrell, Project Director at Dulux Australia

Using simulation and paperless production **reduced** the time needed to take the Merrifield plant from plan to production by **50 percent**.

Virtual twins

3D models of the entire plant have been integrated into Comos Walkinside³, a virtual reality platform which accesses all plant information and displays the current status of the plant in visually appealing, clear 3D graphics.

Users can navigate and monitor activity in much the same way as they would "walk" through a scenario in a game.

Predictive maintenance

Dulux used plant simulation - a virtual twin - to provide real-time insights and information on plant, machine and technology performance which can be analysed and factored into predictive maintenance.

This allowed plant managers to try out routine maintenance in a risk-free environment before work is carried out on real machines. Other advantages include:

- Preventing potential damage to physical equipment.
- Ensuring the effectiveness of maintenance processes.
- Disaster scenarios, such as chemical spills and fire, can be simulated in the platform for emergency response training.

It pays to have paperless production

The Merrifield plant is the first factory outside the Pharma industry to use Siemens SIMATIC IT eBR⁴ (Electronic Batch Record) software. Using SIMATIC IT eBR has:

- Cut the factory's paper consumption down to almost zero.
- Increased the transparency, traceability, and quality of production.

Digitalisation provides the tools but it's people who bring the expertise and support that guarantees success.



Paperless manufacturing automatically ensures compliance with all standards and regulations...its real value lies in the fact that every step and every raw material can be monitored, tracked and recorded during production. It also speeds up the creation, execution, review and release of manufacturing processes and batch protocols. We can perform quality checks with raw ingredients at the front end, and the resulting improvements can be implemented automatically to the recipe in seconds.

Kevin Worrell, Project Director at Dulux Australia



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Michael Freyny, Executive General Manager for the Digital Factory and Process Industries and Drives divisions, Siemens Australia



For more information about the chemical industry's digital transformation, download our whitepaper:

[Download the whitepaper here >](#)

¹ <https://www.siemens.com/uk/en/home/markets/chemical-industry/chemical-industry-4-0-a-formula-for-investment-white-paper.html>

² <https://www.siemens.com/customer-magazine/en/home/industry/process-industry/any-color-desired.html>

³ <https://w3.siemens.com/mcms/plant-engineering-software/en/comos-lifecycle/comos-walkinside/pages/default.aspx>

⁴ <https://www.plm.automation.siemens.com/global/en/products/manufacturing-operations-center/simatic-it-unified-architecture-process-industries.html>