



# Optimising Plant Changeover / Cleaning Processes

## Challenge

A 'simple' plant cleaning process to enable changeover between chemical steps in inkjet dye synthesis currently required 2-3 days for three reactor vessels equipped with Clean-In-Place (CIP) equipment, including spray balls and jetters. A reduction in cleaning timelines was required due to capacity constraints.

## Approach

A Britest methodology developed in collaboration with the Irish Pharmaceutical Manufacturing Technology Centre (PMTc) to support the optimisation of changeover/cleaning processes was applied in a one-day workshop. This involved technical, process engineering, continuous improvement and manufacturing functions, with the assistance of a Britest facilitator.

The approach focused on the interplay of three key sets of parameters: *specification* (end-point requirements and means of verification), *engineering* (equipment design, surfaces and CIP capabilities), and the amounts, nature and interactions of *residues* present.

With an emphasis on whole process thinking and mechanistic understanding, Britest tools were used to identify bottlenecks, and to probe specific equipment related challenges. This encouraged a broad-ranging design review focused on delivering shorter and more robust cleaning cycles.

## Benefits

- Immediate improvement opportunity spotted for more effective use of CIP to eliminate boil-out steps, and thus halve the cleaning time.
- Clearly visualised opportunities for potential CIP improvement.
- Whole process analysis led to identification of more ambitious opportunities - a 12 hour cleaning cycle time was feasible through targeted use of a key solvent.
- Greatly improved communication of cleaning challenges between stakeholders.

## Key Features:

**Client** - FUJIFILM Imaging Colorants

**Industry** - Application Area

Speciality Chemicals - Process improvement, plant cleaning, process changeover optimisation

**Challenge**

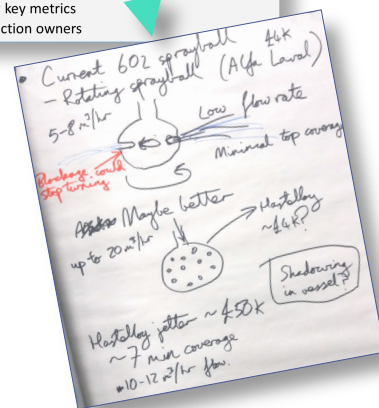
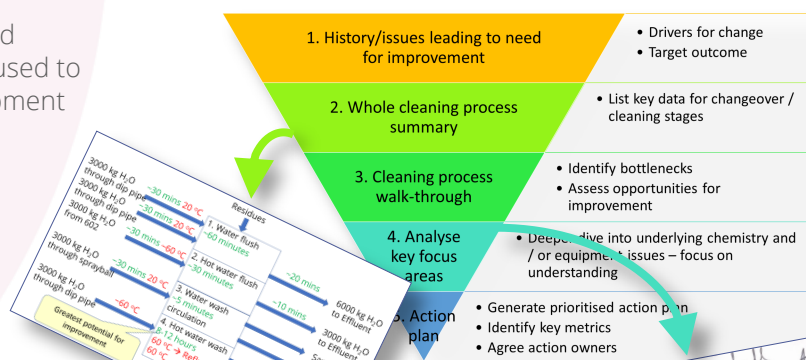
A reduction in a 2-3 day changeover cleaning time was required due to capacity constraints.

**Solution**

A Britest methodology to support the optimisation of changeover/cleaning processes was applied in a one-day Britest-facilitated workshop.

**Outcomes**

Improvements to significantly time-consuming steps, and opportunities for improvements to existing CIP equipment were identified, along with a more ambitious opportunity to reduce the cleaning cycle time to 12 hours through targeted use of a key cleaning solvent.



**A sound methodology and a well-facilitated study helped us use our own process knowledge more effectively to dramatically reduce the cleaning cycle time.**



**DOUG SPENCER, SENIOR DEVELOPMENT CHEMIST**  
FUJIFILM Imaging Colorants

*Generating value from process understanding*

## Contact

+44 (0)161 327 1579  
enquiries@britest.co.uk  
www.britest.co.uk