Britest Improvement Study to Increase Throughput by 50%

The Challenge

To meet an identified customer need, process throughput had to increase by at least 50% within three years

The Approach

Identify business need

Assemble team

Agree objective

Britest study

Action plan

Complete actions & review

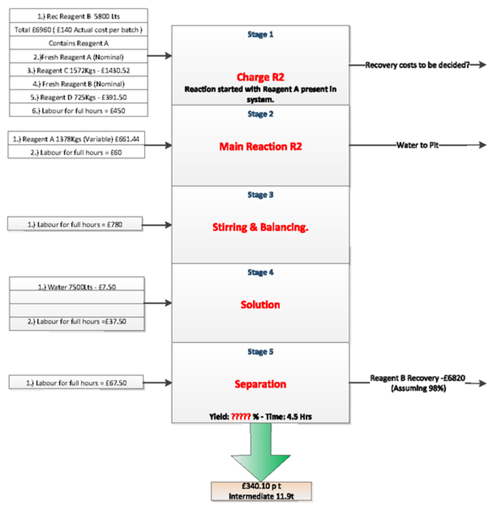
Deliver improvements

Business need met

The Study

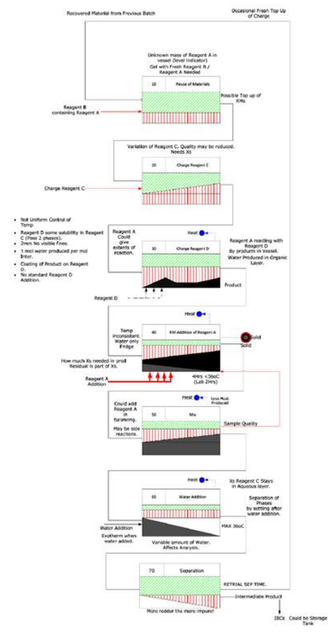
ISA & PrISM

The team clarified the problem using an Initial Screening Analysis (ISA), and identified what to focus on using a Process Information Summary Map (PrISM)



PDD

The team shared their knowledge of the process using a Process Definition Diagram (PDD)



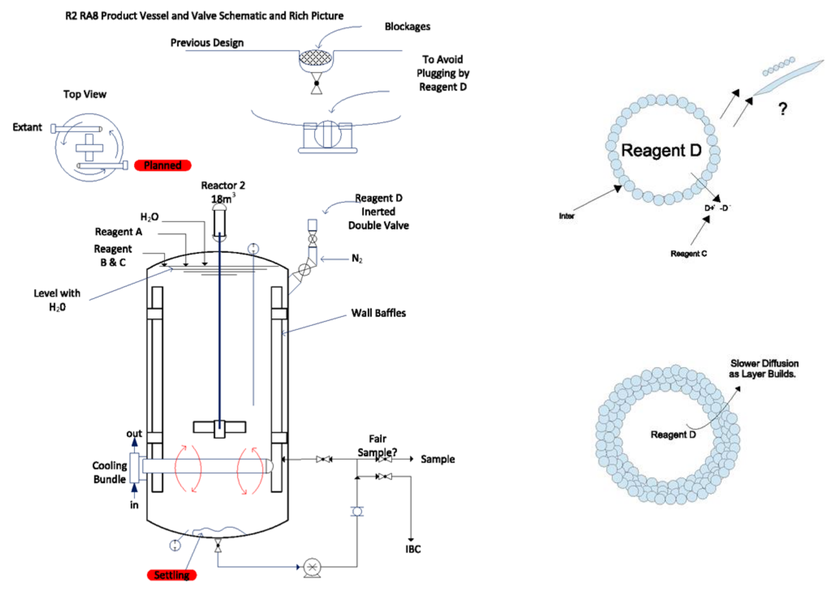
Transformation Map and DFA

The team explored the reaction chemistry using a Transformation Map and Driving Force Analysis (DFA)

Title: Intermediate. Driving Force Analysis.										
Driving Force	MT1	R2	R3	MT4	R5	MT6	R7	R8	MT9	MT10
Reagent D(s) s.area	+									+
	-	+			+?		+	+		+
Reagent D(aq)										-
Reagent A (org)			+		+?	+	+	+		
Reagent A (gas)						-				
Reagent C (aq)									-	
Reagent C (org)	+	+					+	+	+	
Reagent E (org)		P/-	+							
Intermediate (org)			P/-	+				P/-		
Intermediate (s)				P/-						
water(org)		P/-		-	+		-	P/-		
water(aq)	-								+	+
Gel										
Reagent F										
Freagent B										
Reagent G										
Conditions										
Temp (Rate)	(+)	+	+	-	?			+	?	+
Temp (Eqm)	-	-	-	+		+		-	?	-
Solvent Polarity	+	?	?	-	?			?		
Rate of Reaction		?	?					?		
Pressure						-				
Agitation	+						-	+	+	+
Heat Of Reaction	mild exo	mild exo	-80 kJ/mol	mild endo	exo?	endo		-80 kJ/mol		-45 kJ/mol

Rich Pictures

The team shared knowledge about other aspects of the process using Rich Pictures



Discovery

As a result of the study, the team developed new process knowledge that was used to improve the process

Result

Process improvements resulting from the study delivered a 50% reduction in batch time, enabling the target throughput to be achieved

Supporting organisations in gaining value from process understanding