

GENERIC BATCH REACTOR SYSTEM**CLIENT****TITLE OF PROJECT****MECHANICAL FUNCTIONAL TEST
JACKET TEMPERATURE CONTROL****REVISION 01**

Document Approval			
	Name	Signature	Date
Prepared By			
Approved By Engineering			
Approved By Manufacturing Operations			
Approved By Quality			
Protocol must not be executed without all of the above signatures.			

GENERIC BATCH REACTOR SYSTEM

JACKET TEMPERATURE CONTROL

Test Purpose

To validate the jacket temperature control loop across the range of +5 to +155°C with water in the vessel.

Test Set-Up

Confirm each step below is completed by entering a YES in the result column.

Result

Signature

Date

Confirm each step below is completed by entering a YES in the result column.

N / A

N / A

N / A

Vessel temperature control loop tuned.

Condenser temperature control loop tuned.

Volume calibration tests complete and results satisfactory.

Agitator calibration tests complete and results satisfactory.

HTF supply temperature at -25°C.

Temperature = _____ °C.

Vent Systems operational.

Reactor configured as per SOP for heating and cooling under reflux.

Vessel filled to maximum working volume with 10000 litres of pure water at less than 20°C.

Volume = _____ litres.

Temperature = _____ °C.

15mbarg nitrogen blanket on.

Pressure = _____ mbarg.

Agitator set to maximum speed of 100rpm.

Speed = _____ rpm.

DCS set to trend the following.

Contents Temperature A.

Contents Temperature B.

Jacket Inlet Temperature.

Jacket Outlet Temperature.

Contents Pressure.

Condenser cooling system on and control loop set at 10°C.

Temperature = _____ °C.

Vessel heating and cooling system on and control loop set at 10°C.

Jacket Temperature = _____ °C.

Loop tuning parameters (PID settings) used for the test recorded.

Heating:

P= _____

I= _____

D= _____

Cooling:

P= _____

I= _____

D= _____

Test Instrumentation

Signature

Date

Record details of any test instrumentation used duration test execution below.

Test Instrumentation

Serial No.

Calibration No.

Recalibration Date

N/A

N / A

N / A

N / A

N / A

N / A

Test Instructions

Signature

Date

For each test listed below:

Print out a screen mimic at the start and end of the test.

Record maximum overshoot / undershoot from set point. Expected result is < 10 °C.

Record stable temperature range once set point reached. Expected result is ± 2 °C.

Record time to reach stable temperature once set point reached. Expected result is within 15 minutes.

Print out a trend at the end of the test that shows the start and end conditions.

Record any alarms, interlocks and display messages active at the start, activated or deactivated during the test and active at the end.

Once tests are complete ensure system is returned to a safe state.

GENERIC BATCH REACTOR SYSTEM

JACKET TEMPERATURE CONTROL LOOP TEST

Test Data Result Summary

Test Data Result Summary					Signature	Date
Test Range °C	Set Point Overshoot °C	Set Point Undershoot °C	Set Point Stable Range °C	Time to Reach Stable Range °C		
Heating 10 to 60						
Heating 60 to 120						
Heating 120 to 155						
Cooling 155 to 120						
Cooling 120 to 60						
Cooling 60 to 10						
Heating 10 to 120						
Cooling 120 to 10						

Test Acceptance Criteria

	Result	Signature	Date
Screen mimic printouts attached. Pass / Fail.			
Overshoot / undershoot about the set point does not exceed 10°C. Pass / Fail			
Control is maintained within 2°C of set point once set point is reached. Pass / Fail			
Stable temperature is maintained within 15 minutes once set point is reached. Pass / Fail.			
Trends are attached. Pass / Fail.			
Spot checks of trend values are consistent with the manually recorded DCS values at the times selected. Pass / Fail.			

Test Comments

GENERIC BATCH REACTOR SYSTEM**JACKET TEMPERATURE CONTROL LOOP TEST**Test Comments

	Name	Signature	Date	Acceptance Criteria
Reviewed By				
Approved By				