

Dynamic application notes:

## 2-litre HWS glass jacketed reactor controlled with a Huber Unistat Tango

### Equipment used:

- Unistat Tango (Cat No. 534.0003)
- HWS 2-litre glass reactor
- Buddeberg stirrer
- 1000 watt immersion heater
- Huber Laboratory controller
- Buddeberg process Pt100

### Unistat Tango specifications

<b>Cooling:</b>	0.7 kW at 100°C 0.7 kW at 0°C 0.4 kW at -20°C
<b>Heating:</b>	1,5 kW
<b>Pump:</b>	Flow 15 l/min Pressure 0.5 bar



Unistat Tango connected to the Buddeberg 2-litre reactor

### The Aim

The aim of this experiment is to demonstrate the responsiveness of the Unistat Tango to sudden changes in thermal load within the reactor.

### The Method

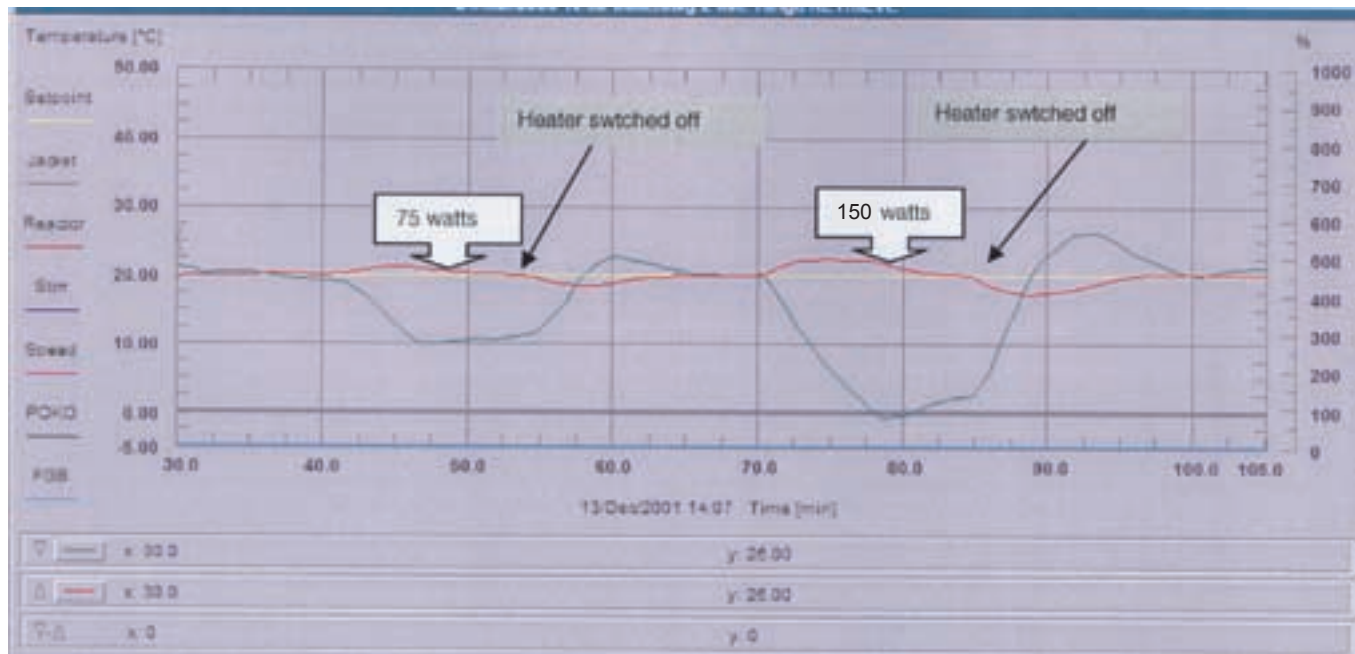
The Buddeberg 2 litre reactor was filled with water. The Budderberg stirrer was set to a speed of 150 rpm. A process sensor (Pt100) was fitted and process control selected on the Unistat Tango.

An electric immersion heater was placed inside the pot of the reactor and connected to a Huber lab controller allowing us to vary the amount of heat injected into the water.

2 "reactions" were carried out at 20°C. The first being 75 watts, the second being 150 watts.

# APPLICATIONS

## Results



### 75 watts

From stable conditions at 20°C, the immersion heater was switched on at a power of 75 watts.

The process temperature begins to rise and the jacket temperature falls rapidly to 10°C and very quickly arrests the rise in process temperature and returns it to the set-point of 20°C within 10 minutes

Once the process had re-gained 20°C the heater was switched off. The process temperature begins to fall but the jacket temperature quickly rises to return the process temperature to 20°C.

### 150 watts

From stable conditions at 20°C, the immersion heater was switched on at a power of 150 watts.

The process temperature begins to rise and the jacket temperature falls rapidly to -2°C and very quickly arrests the rise in process temperature and returns it to the set-point of 20°C within 12 minutes.

Once the process had re-gained 20°C the. The process temperature begins to fall but the jacket temperature quickly rises to return the process temperature to 20°C.