The Agitation and Stirring Unit (ASU)

THT product code = ARCSYS-ASU

The Agitation and Stirring Unit comprises:

- Magnetically coupled bidirectional stirrer unit (quick assembly design)
- Magnetically agitated low phi bombs (2 off ARCTC-SS-S65)
- Integrated Support Electronics
- Integrated Control Software
- Stirring at set stirring speeds and reverse agitation for viscous sample

The THT Agitation and Stirring Unit (ASU) has been designed to add agitation and stirring functionality to the THT esARC.

The Unit consists of both hardware and software components. The system is designed to work with either the standard or fast tracking calorimeters. The ASU can operate within a temperature range of ambient to 500°C and allows stirring speed up to 600rpm.

Calorimeters can be purchased with the ASU assembly within or this can be installed at a later date on the calorimeter. This will either require a THT trained technician to visit the site or the calorimeter sent to THT.

The ASU comes with two large volume stainless steel test cells with stirrer bars inside (Fig. 1). Additional large volume or standard cells can be ordered with stirrer bars inside.

Figure 2 shows the stirrer magnet in-situ and Figure 3 shows the stirrer motor and drive shaft connected to calorimeter.
Example: Emulsion Polymerisation of Vinyl Acetate

The tests were carried out with the same conditions apart from one used a standard bomb and the other was a standard bomb with stirring at 400rpm.

The sample was a 1:1 mix of water and vinyl acetate, the water had small quantities of a common emulsifier initiator and buffer.

Clearly the amount of heat released is similar – but the speed of release is much faster when stirred (Fig. 6) – as might be expected with the dispersion of the sample caused by the stirring action.

The maximum self heat rate is ten times faster with stirring (0.7°C/min unstirred and 7°C/min stirred).

Note: The OSU must be purchased with this option