DrySyn SnowStorm Application Note

Comparing performance with a conventional ice bath.
This test was carried out independently by an Asynt customer.

Objective:

To observe the active cooling of a DrySyn SnowStorm unit compared to a passive ice bath, ascertaining which was better at controlling an exotherm.

DrySyn SnowStorm Set Up:

- 100 mL round bottomed flask, Methanol 50 mL
- DrySyn SnowStorm base and 100ml insert
- Huber Ministat 240 with temperature range of -45...200 °C
- PT100 sensor in DrySyn SnowStorm block (Monitoring Drysyn SnowStorm temperature)
- PTFE coated PT100 sensor in reaction flask for feedback control to Huber Ministat
- Magnetic stirrer, 700 rpm

Ice Bath Set Up:

- 100 mL round bottomed flask, Methanol 50 mL
- Plastic ice bath, 900 g ice and 400 mL water
- Magnetic Stirrer, 700 rpm
- Metal sheathed PT100 probe monitoring ice temperature
- Metal sheathed PT100 probe monitoring solution temperature

No insulation used.

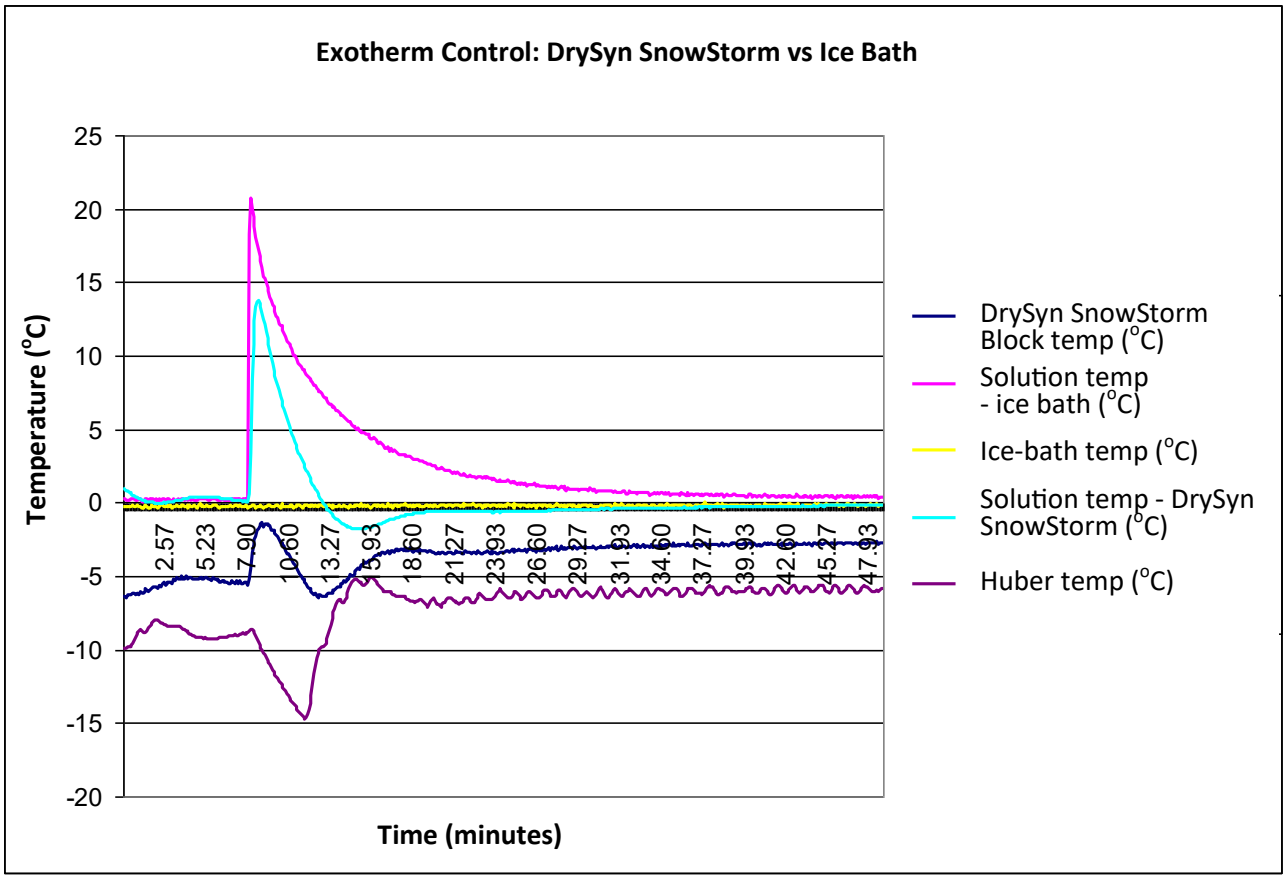
Experiment:

Both systems were set up and monitored using a datalogger.

Both systems were equilibrated until the solution temperature was stable at 0 ºC.

At time = 7.9 minutes Methanol (rt, 20 mL) was added to each reaction to simulate an exotherm. The reactions were monitored and the results recorded. (See Figure 1.overleaf)

Figure 1:



Conclusions:

- DrySyn SnowStorm controlled the high exothermic temperatures more effectively than the ice bath. The temperature in the DrySyn SnowStorm reached 13 ºC whereas in the ice bath it reached 20.7 ºC
- DrySyn SnowStorm rapidly cooled the temperature to 0 ºC in only 5 minutes. The ice bath failed to reach 0 ºC. However, after 21 minutes, the ice bath had reached 1 ºC
- Figure 1 shows that when controlling an exotherm, the DrySyn SnowStorm will be more effective due to the

Further Information:

DrySyn SnowStorm ONE

Huber Ministat 240