

Case Study

JULABO ME-31A

Case Study
08-2004
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Cooling a Visco Bath ME-31A (viscosity measuring) using F12-MA or FE500



The Objective

Testing of a visco bath using a refrigerated/heating circulator or a recirculating cooler for cooling.

The Motivation

An increasing number of viscometry applications is carried out at or below ambient temperatures. Counter-cooling with tap water does not produce satisfying results because temperatures can only be slightly reduced. However, using a refrigerated/heating circulator or a recirculating cooler offers the following advantages:

- Lower working temperature range
- Better temperature stability
- Steady costs for tap water usage are avoided

Medium in ME-31A: Water
Medium in F12-MA: Ethanol



ME-31A



F12-MA



FE500

ME-31A with F12-MA

After 7 hours, an internal temperature of +10 °C was achieved in the ME-31A. Then the test was interrupted, because it was obvious that the time required for cooling would be too long.

ME-31A with FE500

With this combination much better cooling performance was achieved. Already after 1 h 20 minutes, a setpoint temperature of +10 °C was achieved in the bath of the ME-31A. At that temperature, the ME used a capacity of 200 to 260 Watts for heating. This means, the FE500 still had a reserve of about half of its cooling capacity.

In the course of testing, the setpoint was changed to 0 °C. At an actual value of +2 °C ice was formed around the cooling coil. Since this has an insulation effect, the actual temperature settled down at +2 °C. If a different bath fluid had been used in the ME-31A (for example: water-glycol), a lower temperature could have been reached.

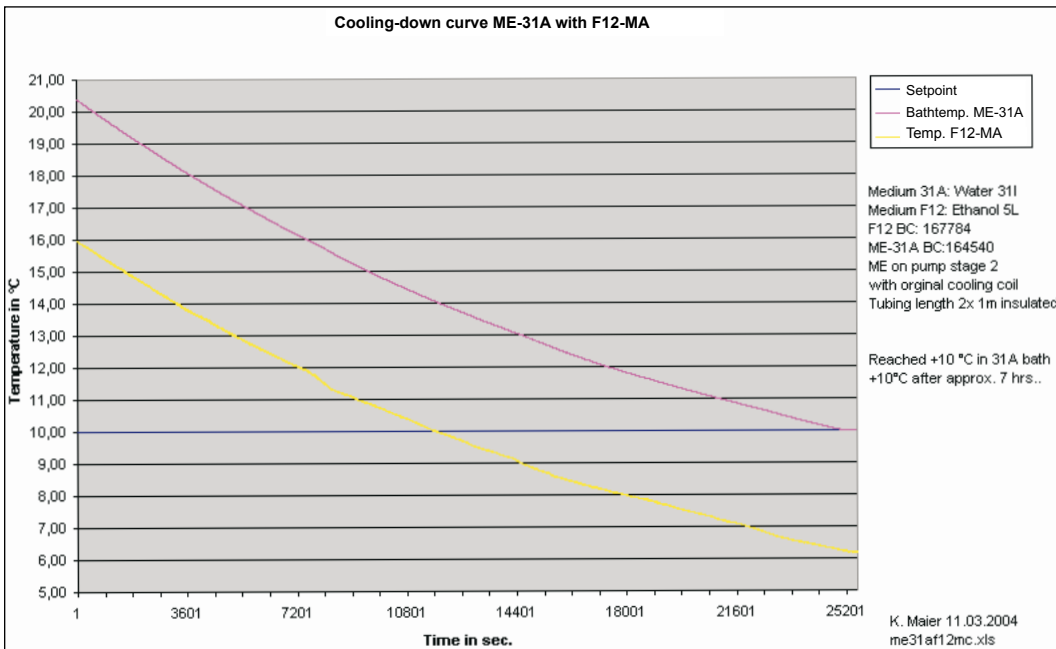
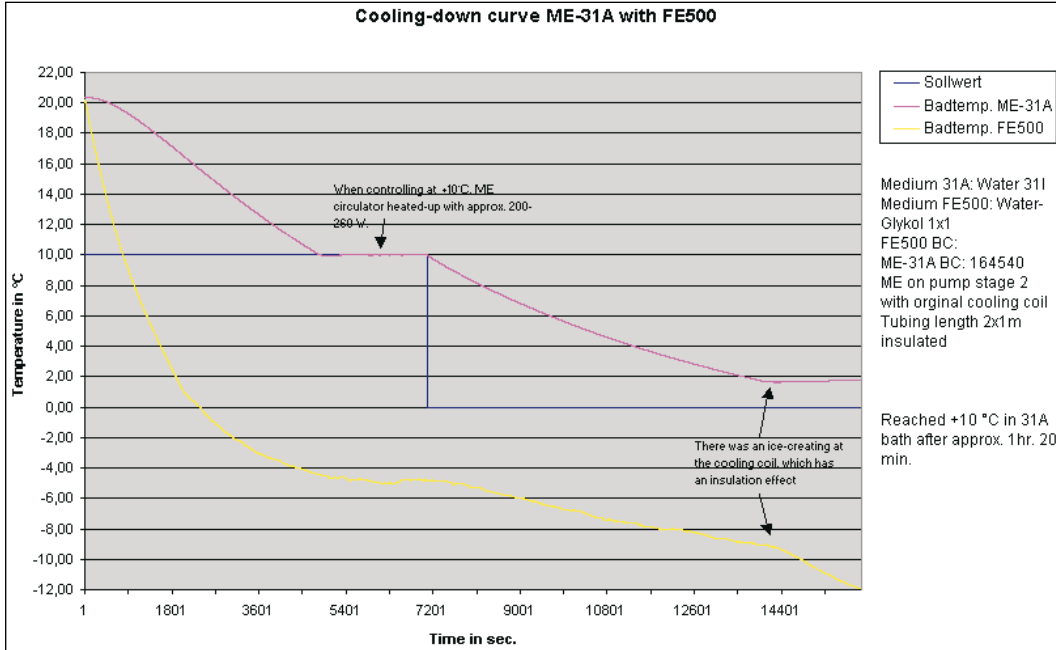
Result

Looking at the small price difference compared to an F12-MA and the much higher cooling capacity (resulting in faster cool-down times), the use of an FE500 recirculating cooler is recommended for rapid cooling of an ME-31A visco bath.

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