SBM-JRA Meeting
Stopped-Flow system

S. Baudoin, J. Gonthier *et al.*
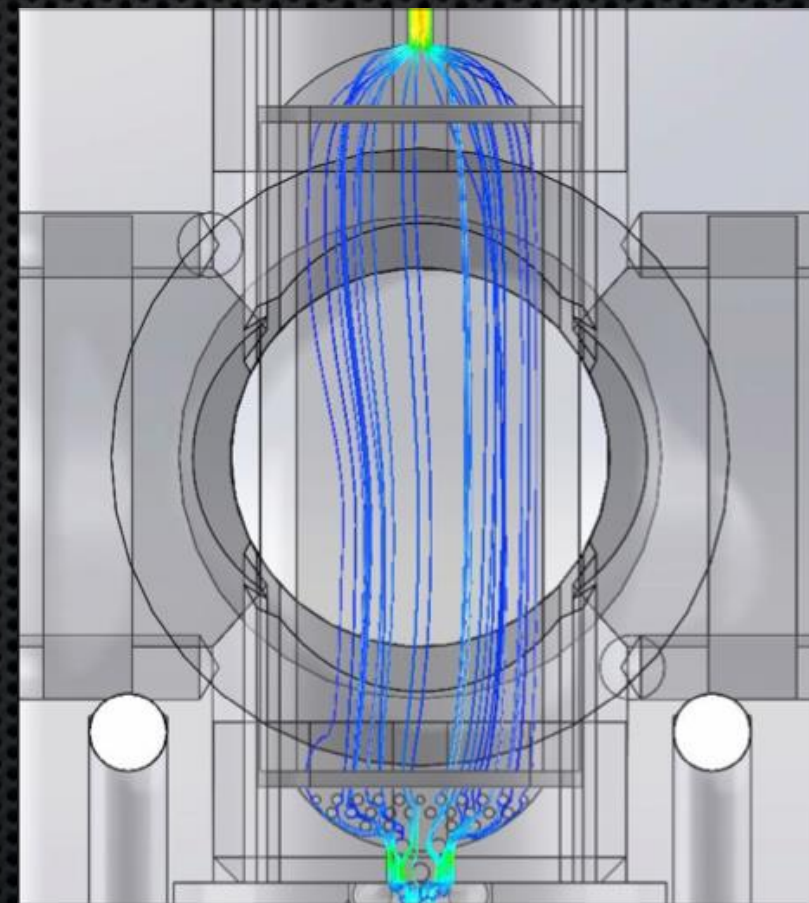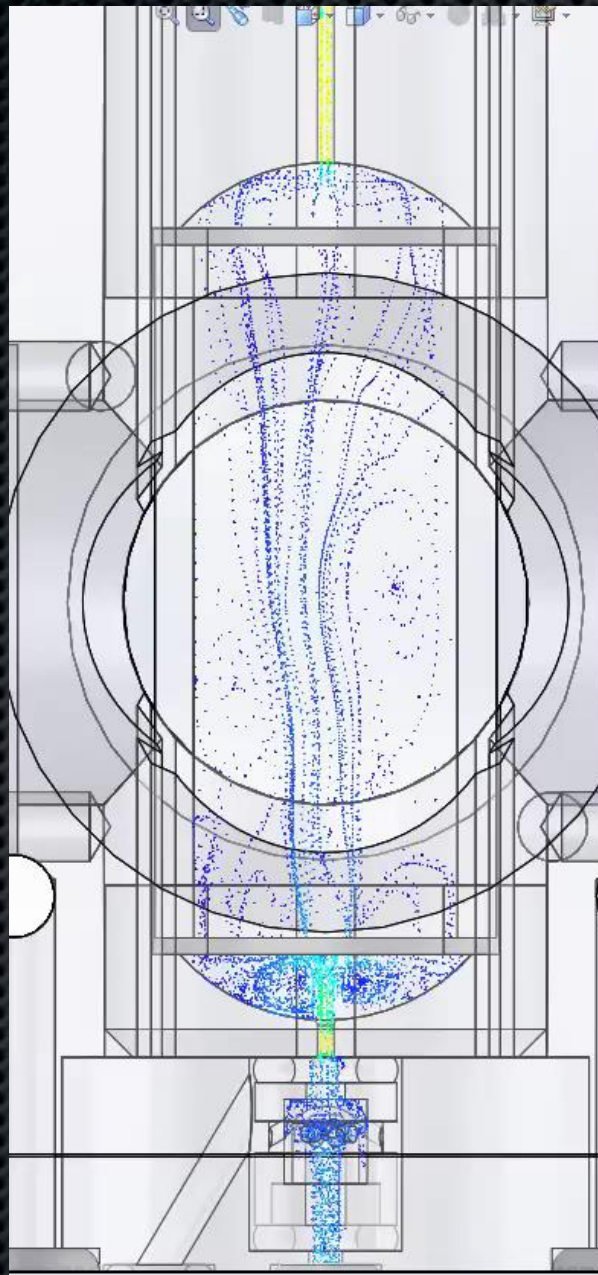
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Stopped-Flow for SANS

- Today on D11, D22 and D33:

  - 10 x 25 x 1 mm^3 Hellma cells i.e. 250 µL,

  - Typical counting time of a few minutes,

  - Sample replaced in 50-200 ms with 600-800 µL,

  - Measurements repeated until sufficient statistics

- Goals: reduce wasted sample to minimise preparation time & costs, improve temperature stability (0.1 K), allow temperature steps.
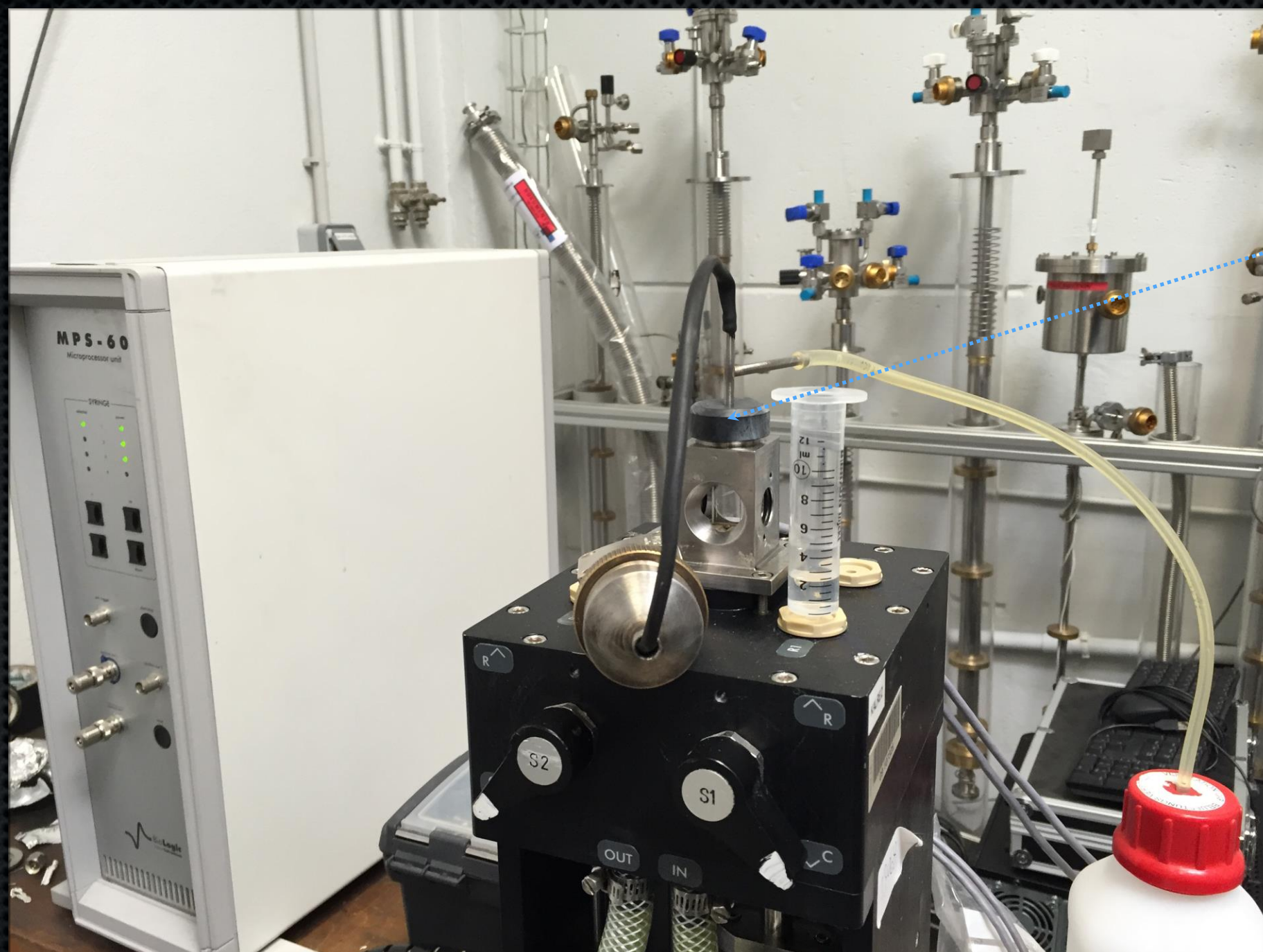
Damping grid

Toward a laminar flow…
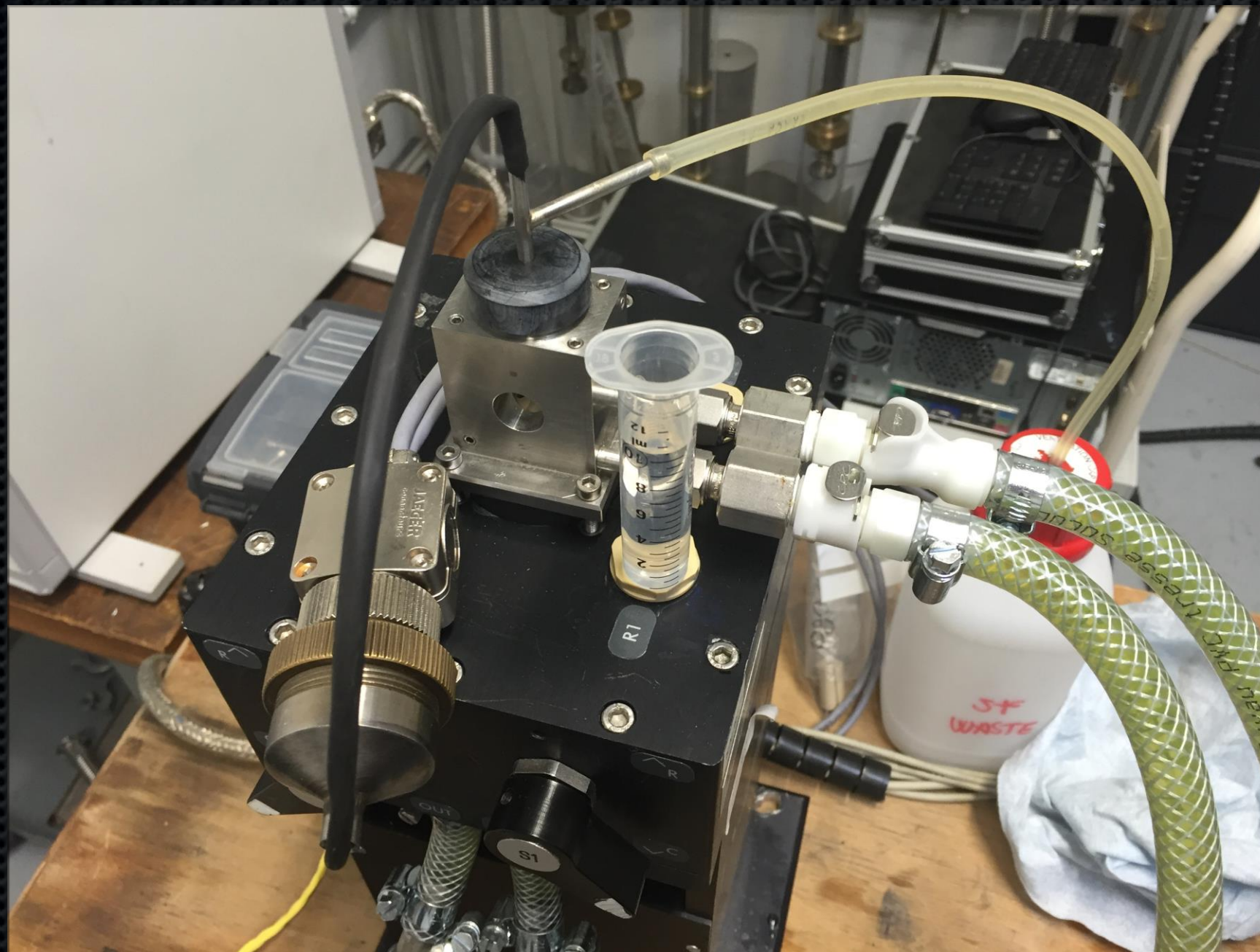

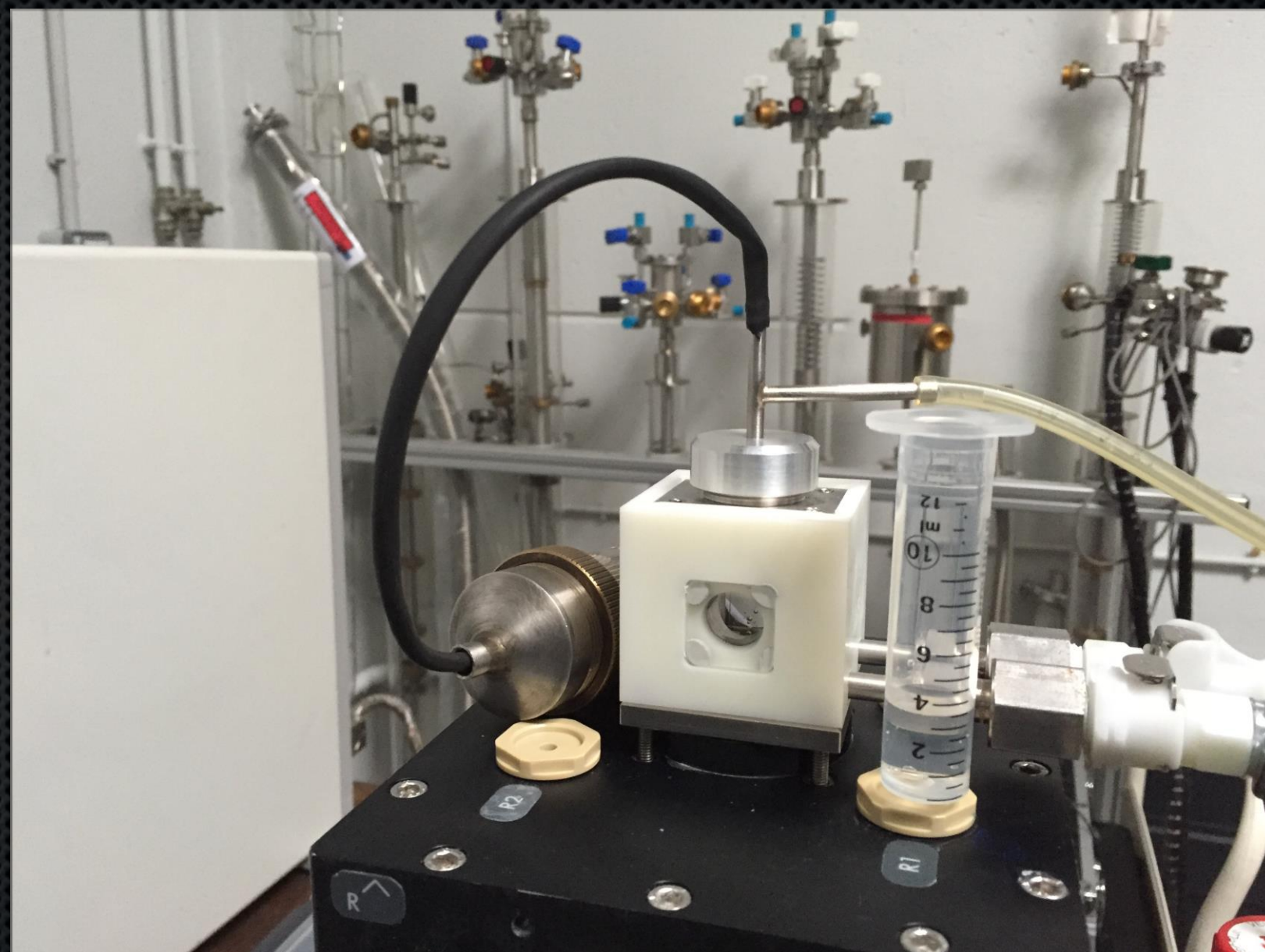3x cell volume <u>still</u> required
but 40% less volume

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Old Head

Sample sensor

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New Head (w/o insulation)

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New Head (insulated)

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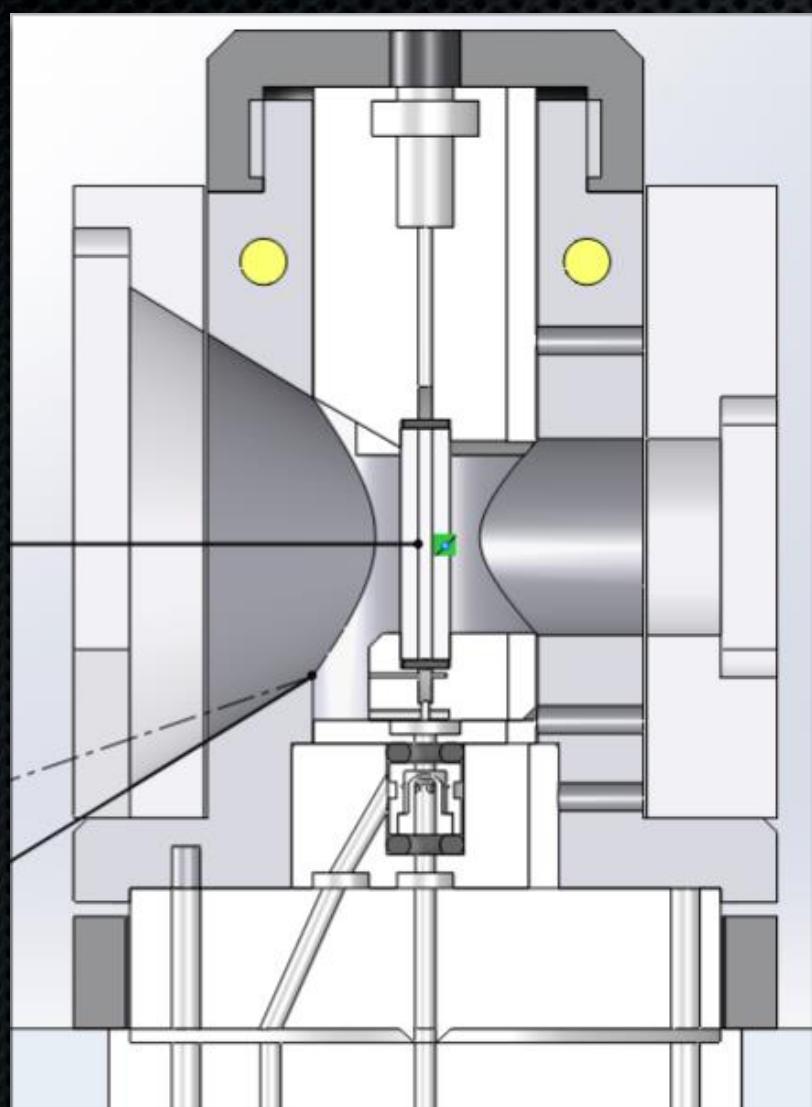
Head decoupled from bath

Full Flush @ 50°C

Remember: Pt100 above head

Legend:
- Old Head (without insulation)
- New Head without insulation
- New Head with insulation

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Bath & Head Temp sync.

Base & Head from 50 to 25°C

Cooling down at 0.7°C/min
with 320 W

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Temp. step in the head

Base @ 25°C / Head from 25 to 50°C

Warming up at 1.7°C/min
with 2000 W

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2% bath temp. influence

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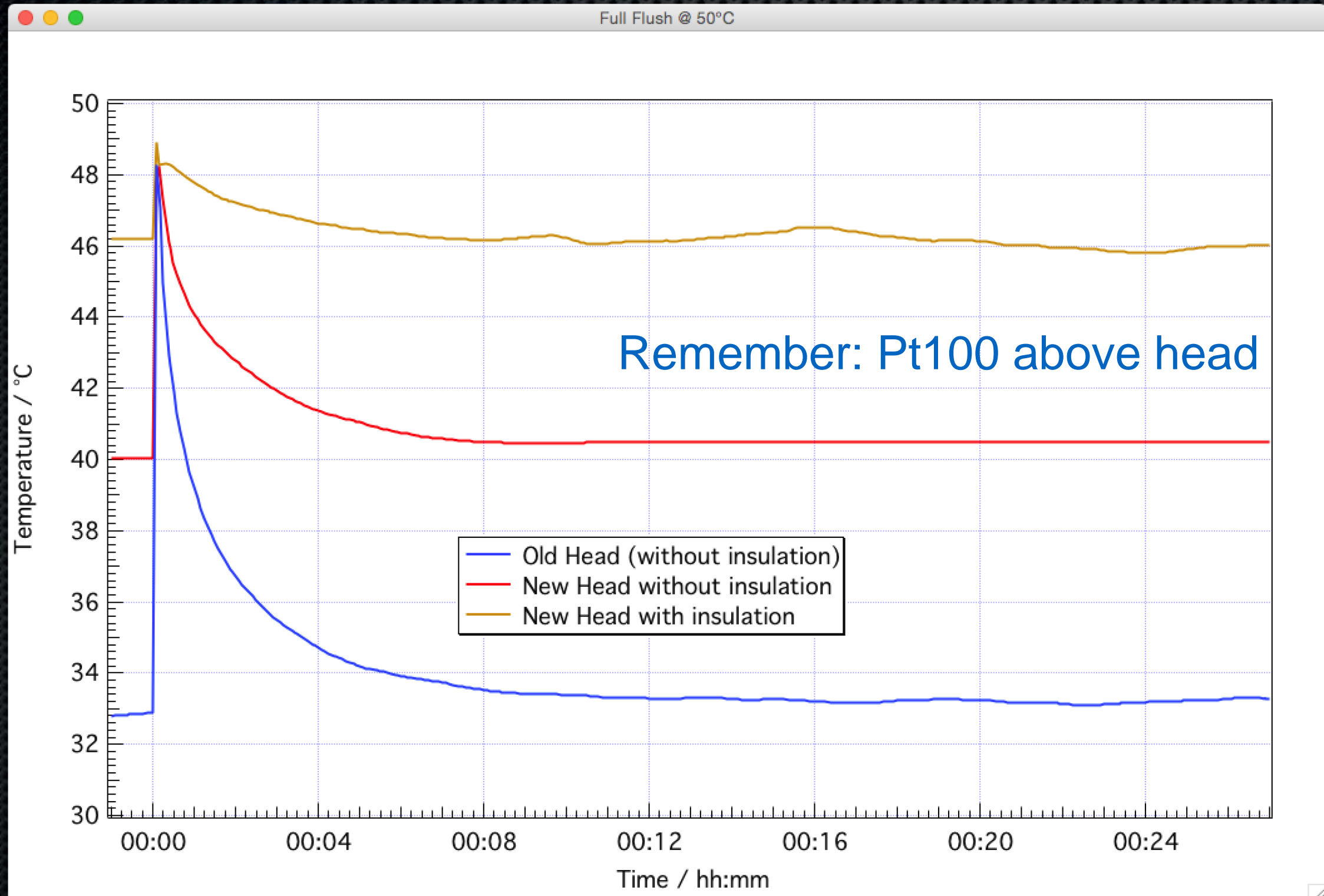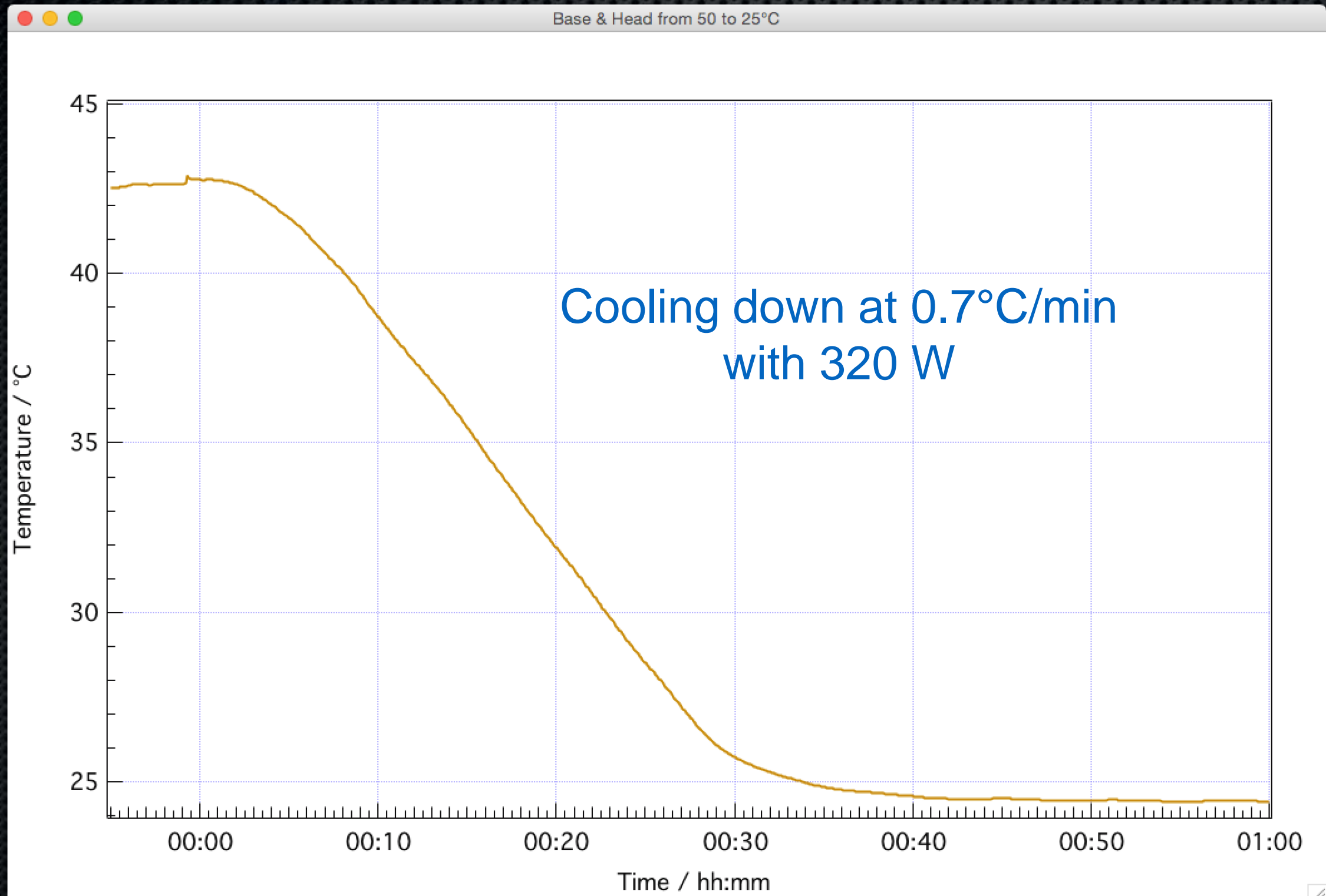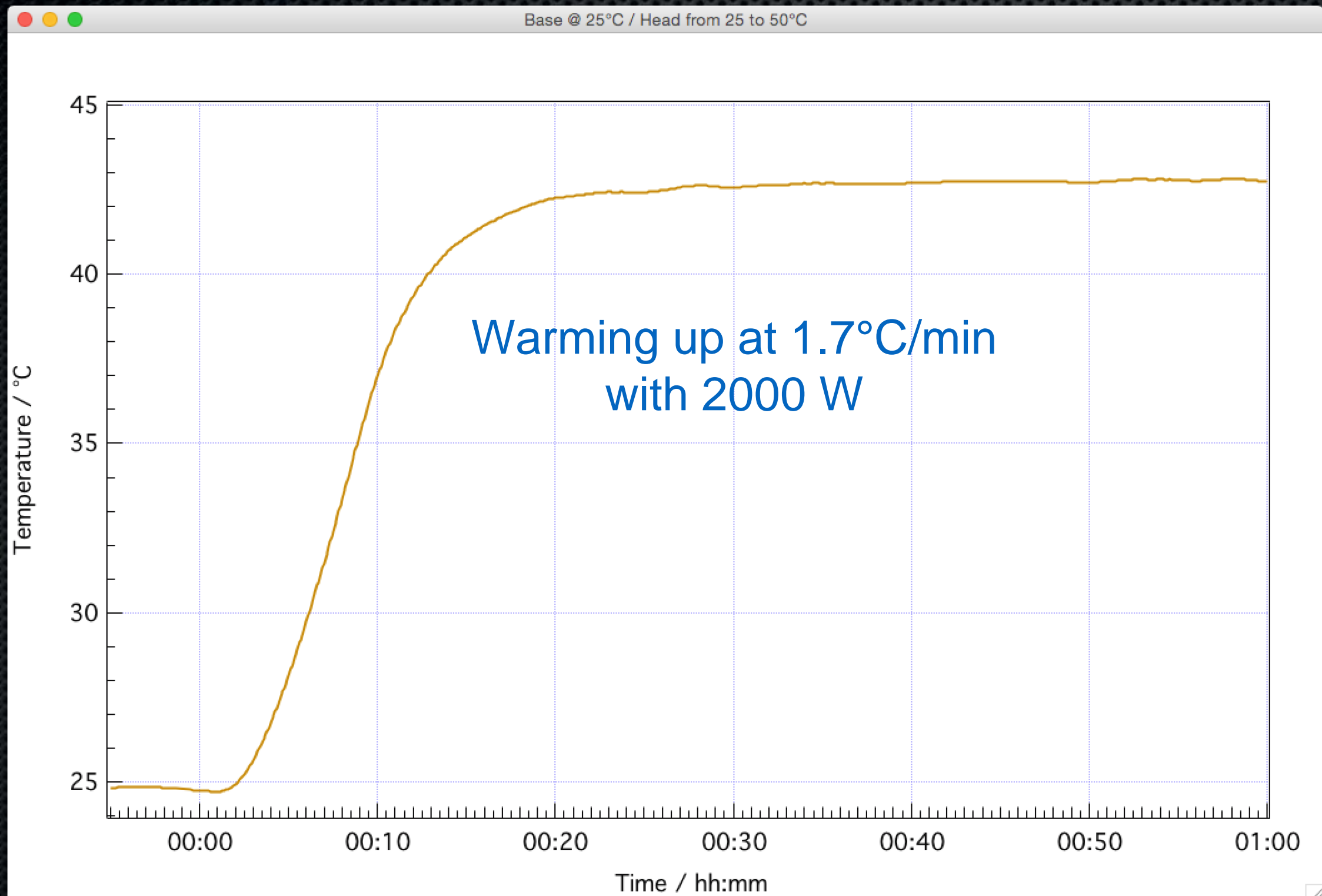
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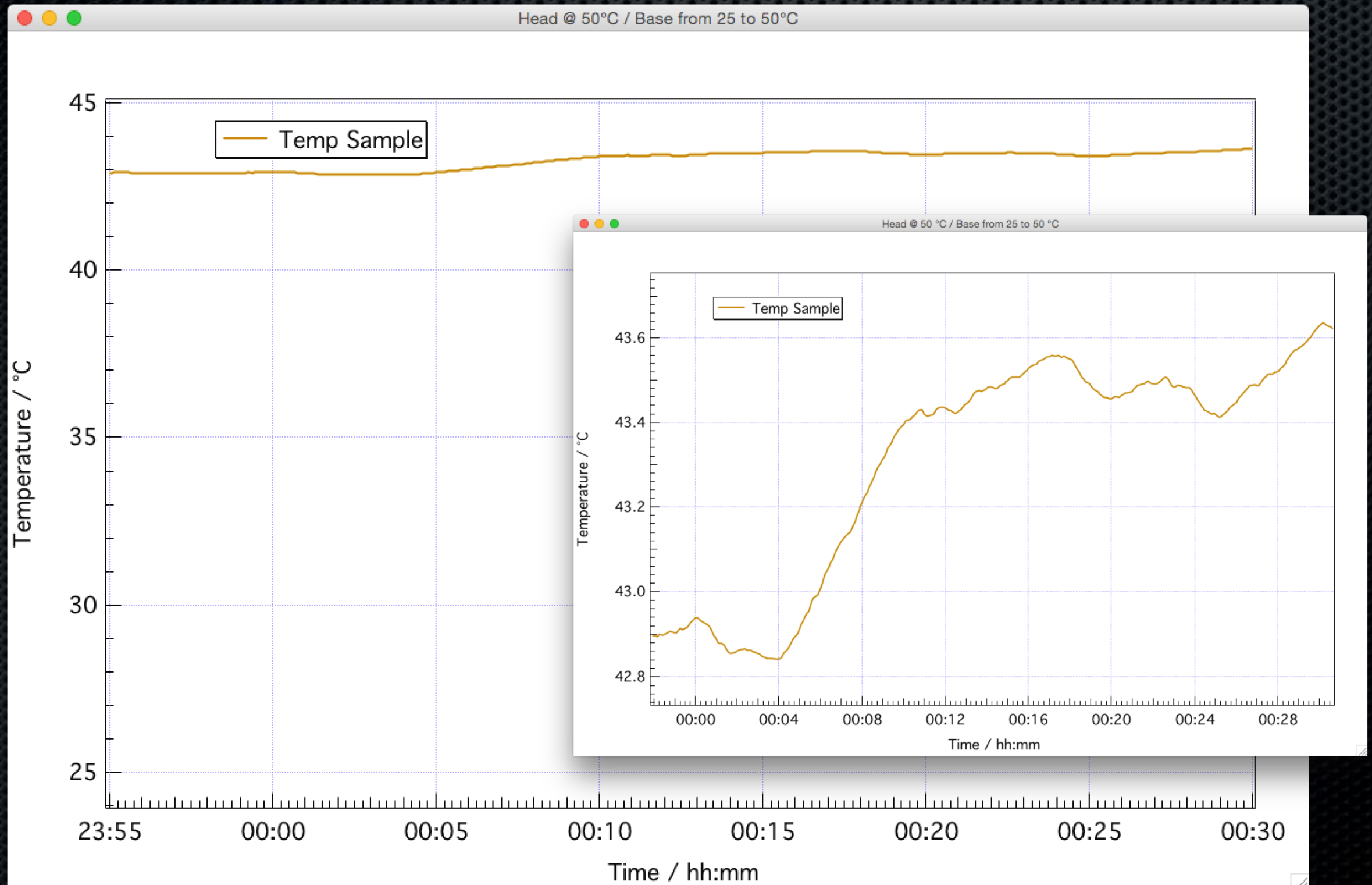
Conclusion & perspectives

- Decoupled temperatures between base & head / between environment & head

- 40 % less volume

- Warming up at 1.7°C/min with 2000 W

- Cooling down at 0.7 °C/min with 320 W

- Simultaneous push/pull technics (as shown by Rob Barker at ECNS)

Perspectives

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