



**Fraunhofer Institut
Biomedizinische
Technik**

**High Precision Cell
Freezer**

- Flexible T-profiles
- Accuracy 0.1 °C
- Silent during operation
- Platform Technology
- Secure “under cover” handling
- Easy handling

The long term storage of certain biological cell samples like suspensions from patients or embryonic animal cells requires high quality processes. A new method of controlling the cooling nitrogen gas improves the temperature accuracy up to 0.1 °K. The Fraunhofer IBMT development opens up a new insight into the contiguity of the successful freezing of living cell samples.

Technology

The optimised control of the temperature in the freezing chamber is achieved by a vaporised nitrogen stream through an isolated hose and passing a heater. The thermoregulation of vaporised nitrogen instead of liquid nitrogen allows a much better control of the sample chamber compared to the standard market available freezer systems. The steady nitrogen steam is responsible for a uniform temperature distribution within the sample chamber.

The complete system is integrated into the IBMT cover technique for working under dry nitrogen atmosphere at temperatures between -196°C and +40°C. The cover systems secure the cooling chain and prevent frost and ice formation on the cold surfaces of the cryosamples and tanks.

A National Instruments Labview Software is the user interface to a PID Controller. All parameters and important states are visualised and stored on a PC.

Cryobank equipment

Are you looking for cryofreezers with high precision thermoregulation for research or application? The IBMT development is a quality improvement for research and production of cryosamples.



Fig. 1: High Precision Cell Freezer with cover technology (acrylic glass hood) in order to prevent frost and ice formation on the surfaces for thermoregulation of up to 0.1 °C precision.

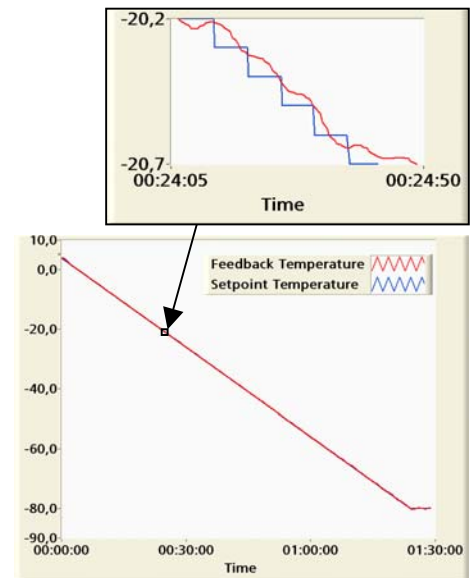


Fig. 2: Measured setpoint and feedback temperature. The values show the precision of the regulation and the free change between cooling and warming periods. The curve is a demonstration of the freezer capability to vary the standard -1°C / min in standard freezing procedures.



Fig. 3: PC software and PID controller.

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