

Precision Molding for Instrumentation to Measure Climate Change in Antarctica

Teledyne Impulse-PDM

Background

It is an established hypothesis that Antarctic sub-glacial lakes house unique forms of life and hold detailed sediment records of past climate change. In December 2012, a team of British scientists and engineers drilled through nearly 2 miles (3 km) of solid ice into a buried lake — Lake Ellsworth in Antarctica.

A 16 ft (5 m) long tethered probe was lowered through the ice and into the Lake to measure and sample the Lake water and to collect sediment samples. Teledyne Impulse-PDM have played a significant role in the project in providing insulated and heated sample bottles which form a key component of the deployed probe.

What were the project challenges?

The challenge was to incorporate a closed loop heating system to the sample bottles capable of deployment and recovery to the full depth of the Lake. The system had to be fully insulated and molded to extremely tight tolerances to allow precision assembly of the probe.

Interconnect

Product:
Polyurethane Molding

Application:
Complex Molding and Encapsulation

Project:
Antarctic Lake Mission Targets Life and Climate Signs



**Precision Molding for Instrumentation to Measure
Climate Change in Antarctica** *CONTINUED*



Highlight:

Impulse-PDM designed molded housings with extremely tight tolerances for a probe to collect climate change data from a narrow opening in a frozen Antarctic lake.

What was the final engineered technical solution?

Teledyne Impulse-PDM was able to draw on many years of experience of precision polyurethane molding to design and manufacture a mold tool and to develop a molding process that delivered a robust solution that completed all qualification testing at the application pressures and temperatures.

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