

Ryan Instruments

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MARKET: Scientific research.

CUSTOMER: The University of Alabama-Birmingham (UAB) performs low-gravity experiments aboard the NASA Space Shuttle.

PROBLEM: Temperature fluctuations and earth's gravity cause protein crystals to grow imperfectly. Researchers seek to grow "perfect" protein crystals aboard NASA's Space Shuttle, in order to learn more about proteins related to human diseases and agricultural crops.

APPLICATION: A Ryan TempMentor™ is used to monitor and calibrate the refrigeration incubators for the protein crystals that go into earth's orbit. Time/temperature monitors (TTMs) are also used to track temperatures of the protein crystal growth trays upon their return to earth, until they are sent back to the laboratory.

BENEFIT: Scientists are able to perform delicate, temperature-sensitive experiments in space, because of Ryan TTM accuracy. "Ryan is quite stable to the tenth degree (0.1° Centigrade), which is important because of minute temperature differences within a defined space in the refrigeration incubation modules," says H. Wilson Smith, research engineer at the UAB Center for Macromolecular Crystallography.

CONCLUSION: "Growing the crystals is a difficult process," Smith says. "One of the parameters is stability of the temperature environment in which we're trying to grow the protein crystals. I would say that the use of Ryan units has helped tremendously in testing and establishing temperature profiles for the incubation hardware."