Exploding Demand for New High-Strength ‘Glass Bubble’ Drilling Additive Prompts 3M to Expand Production with New Plant in Brazil

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Company’s Microsphere Technology Enables Oil Exploration and Extraction at Unprecedented Depths: Lightweight Filler for Pipe Insulation, Drilling Fluids, Buoyancy and Cement Slurries Boosts Reliability and Efficiency

ST. PAUL, Minn.--(BUSINESS WIRE)--In response to rapidly accelerating demand, 3M has opened a new plant in Ribeirão Preto, Brazil, to ramp up its production of 3M™ Glass Bubbles designed for use as a lightweight, ultra-high-strength filler in pipe insulation, drilling fluids, drill riser buoyancy and cementing operations for oil and gas exploration and development.

3M Glass Bubbles are hollow glass microspheres used in applications that enable deep-sea oil and gas drillers to operate at greater depths than ever before because of their crush resistance at extreme ocean depths and a host of other characteristics, including low density, buoyancy and thermal insulation capability. They are chemically inert and therefore resistant to corrosion.

On land, 3M Glass Bubbles increasingly are used in lieu of conventional aerated fluids for improved recovery operations in near-depleted fields. With simplicity of use as a dominant feature, they can be added to virtually any type of existing fluid system to reduce its density and create a lightweight yet incompressible fluid.

Brazil becomes the fourth country and fifth plant where 3M Glass Bubbles are produced, joining the United States, France and South Korea.

“The industry has embraced this new technology worldwide, because it provides greater reliability and efficiency of operations,” says Keith Rutkowski, business manager for specialty additives, 3M Energy and Advanced Materials Division. “An additional production facility is necessary to meet the projected level of demand.”

Ribeirão Preto is a city of about 600,000 residents, some 200 miles north of São Paulo, Brazil’s largest city. The new 25,000-square-foot facility is situated in a high-tech industrial complex. It is anticipated to be operational on a commercial basis at the end of November 2011.

“Many of our current customers are expanding operations in Brazil,” says Rutkowski. “The manufacturing location we have chosen offers a technology-rich environment from where we can provide a high level of customer support for that nation’s rapidly expanding deep-sea operations.”

3M Glass Bubbles are engineered fillers that have applications in a variety of other industries – including aerospace and automotive – for their ability to reduce the weight of various components without sacrificing strength, and for their superlative insulating qualities. For example, 3M Glass Bubbles can reduce the weight of plastic parts by 10 to 20 percent, while reducing production time, thus improving productivity. The lightweight feature has even found an application in Asian rice paddies, where it is used in an herbicide that floats on the surface of the water.

In deep-sea drilling applications, the strength, inertness, and low-density characteristics of hollow glass microspheres help ensure the quality of set cement under extremely challenging and demanding conditions of temperature and hydrostatic pressure, as well as insulate pipes carrying oil at temperatures as high as 150 degrees Centigrade, according to Rutkowski. “The integrity of the oil well is an ever-more pressing issue, especially in off-shore drilling, and that is a major reason that interest in 3M Glass Bubbles as an additive is rapidly growing,” he says.

The technology has been successfully adapted specifically for oil and gas drilling applications in the last decade. More recently, 3M developed higher performance Glass Bubbles designed to meet the rigorous and demanding productivity needs of the industry. For example, as wells go deeper and deeper, the insulating properties of Glass Bubbles become crucial for preventing the hot oil from coagulating as it flows toward the surface and begins to cool. As the oil is pumped toward the surface, it can thicken, plugging up the pipe, much like a home drain pipe in a kitchen sink can plug with grease. Bubbles insulate the pipe, keeping the oil warm and flowing.

The basic technology was invented by 3M in the early 1960s. Solid glass beads were first used as a reflective material to
improve the visibility of highway signs. 3M scientists discovered a way to make the beads hollow, thus paving a path forward for their evolving use in a multitude of industrial applications.

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