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Shattering Stale Concepts—Re-inventing the Glass Industry

The glass industry has seen a substantial decline, with the number of glass tanks shrinking by 65% since 1970. Profitability is marginal across much of the industry with the exception of the specialty glass sector.

This results, in part, from the fact that most of our industry production is in commodity products, i.e. products commonly used in society and whose sale is often a function of price as opposed to true performance or feature differences.

Additional factors include increases in energy prices, competition from low-labor-cost geographical areas and market evolution (TV tubes no longer are made in the United States, as preference moves toward flat-screen technology).

Business investment is not keeping up with demand for modernization—strategies focus on extracting a maximum return on current investments because the financial return is low.

With DOE's assistance, the Glass Manufacturing Industry Council (GMIC) was established in 1998 to improve the industry. Now, GMIC is moving beyond its role as a technical organization and is considering the "big picture," including financial and business issues. We want to see the industry grow again!

Image Problem

Our members have noted that the issues mentioned above create an "image" problem not only with potential investors, but also with students—glass is not seen as the ideal industry to consider.

So, what can we do to stimulate the interest of future graduates? Chemically inert, transparent, strong and hard, glass has tremendous potential with superior dielectric properties and much more; but it's brittle. It exhibits on average only 1/200th of its potential strength. We need new industry solutions that will lead to new products and markets, and new opportunities for higher margins.

Last year we adopted a three-pronged approach:

1. Reduce costs through revolutionary technology. The submerged combustion melting technique under development is expected to reduce costs substantially.

2. Create more student/academic interest in glass.

- Sponsor a high-strength glass applications contest that will help develop market product ideas.

- Create a new "University Member" category to seek mutual benefits.

3. Create industry "Grand Challenge" to open new markets.

- Sponsor an "X Prize" in glass to achieve greater strength objectives. This contest will be announced in 2007.

The Student Contest

Why focus on strength? It's a widely recognized limitation of glass. We need new product ideas with the potential for higher gross margins to restore our momentum.

Why a contest to motivate students? Thinking beyond today's reality will be intellectually challenging. Students will need to research glass properties and appreciate its many possible uses. It's designed to fire the imagination and holds a promise for help with educational costs. Winning or placing in such a contest enhances the resume.

We must keep students interested. They are the future of glass, and we need to show them that there is a future. Our mature industry needs some excitement.

Our first student contest, held in June 2005, received 21 proposals from students in the U.S. and elsewhere that proposed interesting and creative applications and products that would be possible if glass were 50 times stronger than it currently is. Eight cash prizes were awarded. (Papers are accessible online at www.gmic.org.)

The second phase was announced in June 2006. Full details and contest rules will be available in time for classes to begin this fall.

At the encouragement of glass leaders from around the world, the second phase will be a global contest, open to students in all scholastic fields throughout the 2006–07 school year, providing substantially more time to create and document "out of the box" solutions to the challenge. Cash prizes will be substantially higher.

Quick Facts. The contest is open to any college student in any major. There will be worldwide dissemination to all glass associations that are members of the International Commission on Glass.

Students are asked to assume that strong glass (50 times its current strength, or 3.4 GPa) is available in whatever configuration needed. Important considerations include new applications, energy savings and environmental impact, and the size of the potential product market.

Rules and updates also will be posted online at www.materialadvantage.org.