

Public Report: Glass Sub-Program Portfolio Review

The ITP Glass sub-program conducted its FY 2005 portfolio review meeting on September 14-16, 2005 in Chicago, Illinois, which was hosted by Argonne National Laboratory. The meeting consisted of presentations on several agreements as well as the overall portfolio, and included tours of Argonne and the Gas Technology Institute. Knowledgeable, independent experts reviewed the overall subprogram and viability of the focus areas, including the relevance and value of the glass portfolio. The reviewers also evaluated each agreement and made recommendations for future efforts.

Also in attendance were representatives of the Glass Manufacturing Industry Council (GMIC), an association of major U.S. glass companies and supporting organizations. This group works with government and academia to promote the development of more environmentally-sound, energy-efficient glass technologies. The GMIC also provided independent reviewers and feedback on the Glass sub-program in a separate process.

The Glass sub-program responds to the unique challenges in the glass industry by supporting collaborative, innovative R&D improvements in process technologies, design tools and methodologies; promoting demonstrations of promising technologies; and promoting the implementation of best practices and emerging technologies that will contribute to the ITP goal of helping industry achieve a 20 percent reduction in energy consumption per unit of output by 2020.

The Glass portfolio is currently organized into three focus areas:

- Next generation melting systems
- Energy efficiency performance improvements, and
- Advanced processing and environmental R&D.

With the current price of natural gas, energy costs represent up to a third of direct production costs for the U.S. glass industry. Also, the majority of energy use in the glass industry is used in the melting and refining process. Current glass melting technologies have significant opportunities for improved efficiency, but with existing glass processing parameters and limited research funds, glass manufacturers are reluctant to invest significant capital in the development of alternative melting methods. In this area, ITP is sponsoring cost-shared research and development of alternative methods for melting and refining glass, in order to dramatically reduce melting energy intensity for glassmaking. ITP anticipates that its efforts will lead to a 15% reduction in melting energy consumption and 20% reduction in capital costs for a continuous, integrated melting/refining system producing commodity glass compositions. Annual energy savings of current efforts are projected to be 24 trillion Btu.

Energy efficiency performance improvements can reduce energy use and costs in the production of high-quality glass products. The current strategy is to develop advanced technology that can utilize the existing glass plant structure and address priority needs of the glass industry. ITP expects to demonstrate a plant-wide increase in energy efficiency of 10% through the application of advanced technology outside of the realm of advanced

melting/refining technology. Annual energy savings of current efforts are projected to be 12 trillion Btu.

Advanced processing and environmental R&D will lead to improved production efficiency and yield, as well as reduced environmental impact. Existing efforts are developing advanced sensing and control technologies for glassmaking operations. ITP expects to demonstrate technology that provides a 5% increase in yield improvement and provides significant economic benefit per unit of product. Annual energy savings of current efforts are projected to be 2 trillion Btu.

The Glass sub-program expects the new technologies resulting from its current R&D activities to save a combined 38 trillion Btu annually by the year 2020.

Seven agreements received funding in FY 2005; two involved the research and development of next generation melting systems, two in energy efficiency performance improvements, and three in advanced processing and environmental R&D. Approximately 66% of the glass R&D budget was allocated to next generation melting systems, 23% to energy efficiency performance improvements, and 11% for advanced processing and environmental R&D. Cost-sharing is provided by recipients at a minimum of 30% of total costs for R&D and 50% of total costs for demonstrations.

A solicitation was conducted during FY 2005 and sought proposals in the areas of: refining and conditioning, batch/cullet preheating, glass composition and raw materials, and forming and finishing. Given budgetary constraints, no agreements have been awarded as a result from the FY 2005 solicitation at this time.

Overall, the reviewers believed that the portfolio strategy being pursued was good for meeting current industry needs, and the existing portfolio strongly supports the strategy and goals – particularly when considering the available budget. Portfolio balance was considered good, and current portfolio research efforts are highly relevant, significant and worthwhile.

Future efforts in glass will be guided by budgetary considerations, the ITP strategic and multi-year plans, analytical activities, and feedback from the portfolio reviewers and the GMIC.