

By Karen Wegert

Glass-Ceramic: Steps to Achieving C2C Certification



Sustainability and life-cycle analysis (LCA) are becoming increasingly important as consumers and industry leaders want the facts to back-up environmental claims. SCHOTT, a German specialty glass manufacturer, continuously looks for ways to meet customer demands for environmentally friendly products and manufacturing processes. This year, the company achieved Cradle to Cradle (C2C) certification at the Silver level for PYRAN Platinum, SCHOTT's fire-rated glass-ceramic. The application process for C2C certification was extensive, taking about 14 months to complete.

SCHOTT started with a corporate goal to protect the environment and conserve natural resources. The company achieved this goal by removing the heavy metals normally used as refining agents in the glass-ceramic melts. For example, SCHOTT now produces architectural product PYRAN Platinum fire-rated glass ceramic exclusively by a micro-float process and is able to achieve high-quality, low bubble-count glass without the traditional refining additives antimony and arsenic.

The next challenge was to inform SCHOTT's architectural customers how they can add value to building projects using this environmentally friendly fire-rated glazing product. SCHOTT also wanted to benchmark its manufacturing process against other environmentally conscious companies in the industry.

C2C Program

SCHOTT chose to work with McDonough Braungart Design Chemistry's (MBDC) C2C program (www.mbdc.com) because of the close ties with the LEED building rating system. C2C is a rigorous eco-label

that evaluates all aspects of product manufacturing, including raw material toxicity to both human and environmental health, recyclability, energy and water conservation, and corporate social responsibility. The program also includes an in-depth site audit of the manufacturing facility. Products can be C2C certified at four levels: Basic, Silver, Gold or Platinum. C2C-certified products can help a building qualify for Innovation in Design points in any LEED rating system and are included in the Environmentally Preferred Purchasing Program for government buildings.

Steps to Certification

The first challenge faced as an applicant was the requirement to disclose, under the protection of a non-disclosure agreement, to MBDC the chemical composition of SCHOTT's product down to 100 parts per million, along with the specifications from all of the company's raw material suppliers. SCHOTT was also required to provide detailed process flow diagrams of its manufacturing process. This detailed proprietary information had never been disclosed to an outside company and was a radical change from SCHOTT's normal business practice. It was thanks to the determined focus of top management at SCHOTT's manufacturing site, who believed in what a C2C certification would mean for the product, to divulge these details.

The second step in the application process was to collect detailed energy and water usage at SCHOTT's manufacturing site. PYRAN Platinum glass-ceramic is manufactured at SCHOTT Technical Glass Solutions, GmbH (SCHOTT

TGS) in Jena, Germany, where local regulations and culture have been focused on conservation of natural resources for many years. This part of the process was the most positive and satisfying because it gave SCHOTT a forum to tout the positive steps already taken in terms of energy and water conservation as well as develop new ideas that would result in new programs to implement for continuous improvement.

Friedemann Toepfer, quality manager at SCHOTT TGS, said, "Although we have been focused on improving the ecological impact of our production processes, in working with the C2C Program we learned to consider the totality of the environmental impact of our product, from beginning to end of the product life cycle."

SCHOTT takes pride in the fact that it purchases 20 percent of its electricity demand from renewable sources and generates onsite solar electricity, which is put back into the grid. However, the company still has a way to go to offset the natural gas and electricity consumed in manufacturing. Obviously, glass melting and processing are very energy intensive. MBDC recommended several reputable U.S. suppliers of renewable energy credits from whom SCHOTT could consider purchasing in the future.

Water conservation has been a major focus at SCHOTT's manufacturing site. To underscore this focus, Schott provided a water balance and flow diagram to MBDC showing all water usage and wastewater streams. SCHOTT already uses grey-water for 90 percent of the total water need at its manufacturing site. Freshwater is used only for drinking water and sensitive manufacturing




PYRAN PLATINUM GLASS-CERAMIC SHOWN IN PRODUCTION. COURTESY OF SCHOTT.

process steps. All process water is in continuous loops, and only evaporative losses are replaced. Wastewater is routed to the local wastewater treatment plant, which produces biogas. These are examples of the types of water conservation MBDC is looking for in its evaluation for C2C certification.

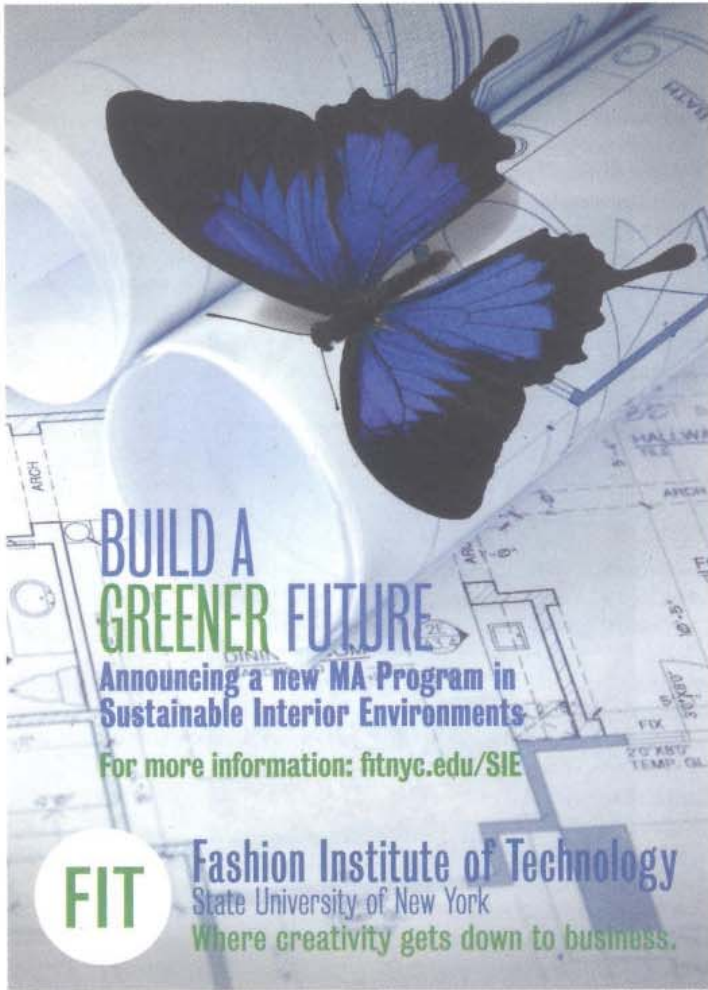
The final area of concentration of the C2C program is corporate social responsibility, including labor practices and ethics, and service to the local community. Additional consideration is given to social responsibility programs that have been accredited by a third party and to programs in place at the manufacturing sites of raw material suppliers.

Results

SCHOTT's overall experience with the C2C certification process was very positive and informative. The certification is reviewed on a yearly basis, which gives applicants the opportunity to strive for higher levels of certification to acknowledge continuous improvement toward the goals of sustainability and conservation of resources. Thanks to SCHOTT's involvement with C2C, the company implemented a recycling program for its glass-ceramic that was previously thought to be technically unfeasible in the U.S. SCHOTT is now considering applying for C2C certification for environmentally friendly products in other markets.

The feedback from SCHOTT's customers has been very positive. Most are familiar with C2C and appreciate the added value the certification provides. 

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