

NEW TECHNOLOGY BRIEF

Rex Materials Group Thermal Control Solution (TCS™) for Plastic Extruders and Injection Molders

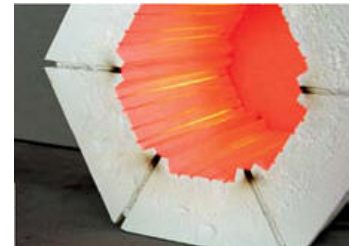
July 2006 - A new technology offers a more energy efficient and effective method of barrel temperature control in plastic extrusion and injection molding equipment. The new Rex Materials Group's Thermal Control Solution (TCS) system efficiently heats and cools the barrels using up to 70 percent less energy than traditional barrel heating and cooling methods.

The TCS™ system has already been used on nearly 100 machines outside of Wisconsin, but the company has yet to enter Wisconsin's significant plastics industry market. To promote the energy saving product in Wisconsin, Focus on Energy and CleanTech Partners (formerly the Center for Technology Transfer) have teamed with a Wisconsin-based plastics company to install a demonstration project. This demonstration will include independent measurement and verification of the system's performance and energy savings. Findings will be documented with a case study planned for publication during the second half of 2006.



How a Rex Materials Group TCS Saves Energy

Much of the heat used to melt plastics is generated via friction between the material feed screw and the inside of the heating barrel. Control of barrel temperatures is traditionally accomplished by ceramic band heaters, which must first heat themselves before conducting heat into the barrels. During the heat cycle, TCS uses radiant heaters embedded in high temperature ceramic insulation to direct heat into the barrel while minimizing heat loss. Since only the radiant heating coils need to reach the desired temperature (and not the whole heating band), Rex Materials Group claims its system can cut barrel warm-up time in half, increasing productivity and reducing energy use.



Conventional methods of barrel temperature control may also require a cooling cycle. Typically, this cooling is achieved with static ambient air or water cooling. Both methods have drawbacks: ambient air systems are slow and water systems can be large energy consumers and difficult to maintain.

The TCS system solves the cooling challenge. It has an air gap between the radiant heaters and the barrel. This gap facilitates air cooling by using a blower system that draws ambient air directly across the barrel. This unique, low maintenance cooling system allows for the capture of the waste heat for space heating or preheating the plastic. The plant can also exhaust the heat to keep the plant cooler, reducing air conditioning costs.



Rex Materials Group maintains that TCS provides easy installation, tighter temperature control, and safer, more comfortable operation. Paybacks based on energy savings alone are between one and two years.



How Rex Materials Group TCS Came to Wisconsin

CleanTech Partners identified the Rex Materials Group TCS system as a candidate technology for achieving energy savings in October 2005. An initial assessment of the technology and preliminary analysis of the market in Wisconsin showed that the product's energy saving benefits warranted a more in-depth assessment of the technology and the company.

Contact was made with Rex Materials Group and it was learned that the company is well established, with over 50 years experience, delivering insulation products to original equipment manufacturers (OEM) of heat treating furnaces and refractory materials for metal casters. The TCS system is their first entry into the plastics market and their first entry into the retrofit market.

After face to face discussions with Rex Materials Group, and meetings with Wisconsin plastics company executives and senior technical staff, CleanTech Partners completed an in-depth Wisconsin market analysis for the product. Concurrent with this effort, Focus on Energy identified companies in Wisconsin with good applications that were willing to try the product. An installation grant was also offered by Focus on Energy as an additional incentive to be an early adopter of the technology. Data from these installations will contribute to the pending case study.

The Future of Rex Materials Group in Wisconsin

After the Rex Materials Group reviewed the market analysis conducted by CleanTech Partners and learned of its ability to leverage Focus on Energy's technical assistance and financial incentives, the company has decided to specifically include Wisconsin in its upcoming marketing and commercialization efforts. It is also accelerating its schedule to provide heater bands for a wider size of plastics equipment to further serve the market. Rex Materials Group is actively seeking manufacturer representatives to expand its ability to sell the product in Wisconsin and elsewhere.

Learn more about the Rex Materials Group on the web at www.rexmaterials.com.

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About Focus on Energy

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment and ensure the future supply of energy for Wisconsin. Since July 2001, the program has helped Wisconsin's businesses and residents cut their annual utility bills by more than \$98 million - reducing their energy consumption by nearly 811 million kilowatt-hours of electricity and more than 40 million therms of natural gas. For more information, call 800.762.7077 or visit focusonenergy.com.

About CleanTech Partners, Inc.

CleanTech Partners, Inc., founded in 2002 as the Center for Technology Transfer, Inc., is a private non-profit, 501(c)(3) organization that facilitates the commercialization of new technologies to improve the competitiveness of Wisconsin's key industry clusters. CleanTech Partners also provides financing for the installation of energy-efficiency best practices when financing from traditional sources is not available. CleanTech Partners' activities have the added benefit of keeping money in Wisconsin by reducing the amount of energy purchased from other states and nations. CleanTech Partners is sponsored in part by Focus on Energy, Wisconsin's energy efficiency and renewable energy initiative.