

# STEEL

## Project Fact Sheet

### LIGHTWEIGHT STEEL CONTAINERS



#### BENEFITS

- Reduces greenhouse gas emissions during manufacturing by reducing steel consumption by as much as an estimated 50%
- Significant energy savings: for a plant producing 200 million containers each year, savings in more than 500 billion Btu's for large containers and 200 billion Btu's for small containers
- Reduces transportation costs and pollution by transferring less steel from the mill to production and in shipping finished goods
- Increases and simplifies recycling due to the ease of hand crushing because the cans have the consistency of a soft drink can when empty
- No side weld or bottom seam resulting in increased corrosion resistance
- Relatively low unit costs due to reduced metal consumption

#### APPLICATIONS

This lightweight container can be used for aerosol type sprays, as well as semi-solid products such as shaving cream and other gels. The global aerosol market is estimated to have annual sales of \$2 billion.

### CONSTRUCTING STEEL CONTAINERS USING INTERNAL PRESSURE FOR CAN STABILITY SUBSTANTIALLY REDUCES ENERGY AND STEEL CONSUMPTION

Dispensing Containers Corporation (DCC) is addressing the problems associated with the manufacturing of thick-walled dispensing containers by adapting existing two-piece, drawn-and-ironed beverage can production technologies. DCC's solution relies on a can's internal pressure, rather than a thick wall, to retain the rigidity of the container. As a result, the wall can be thinned substantially, from a conventional thickness of 0.007 – 0.012 inches to approximately 0.004 – 0.005 inches.

Use of this technology leaves the bottom of the can thick enough to comply with Department of Transportation requirements for shipping. Based on prototype testing, this technology will result in a 40% average reduction in the metal content of the container body, with equivalent or better strength. DCC has also developed a lightweight dome which, when used in conjunction with the DCC body, brings the total metal reduction per container even higher, to as much as 50% for some sizes. This reduction in raw material will lead to corresponding reductions in costs and waste emissions created during manufacturing.

#### LIGHTWEIGHT AEROSOL CANS



Constructing steel containers using a can's internal pressure to make the can walls rigid will save energy and reduce steel consumption and greenhouse gas emissions during manufacturing.



## Project Description

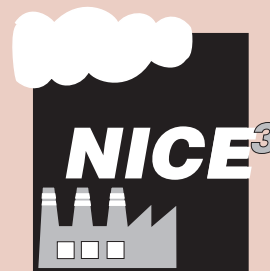
**Goal:** Demonstrate a full-scale system for manufacturing steel dispensing containers with an average of 40% less raw material than conventional manufacturing processes.

In the conventional production of a pressurized dispensing can, the top and bottom are characteristically weak compared to the relatively strong cylindrical body. DCC is using NICE<sup>3</sup> funds to demonstrate the production of a thin-walled container with a bottom thickness and design requiring a minimum amount of metal. Specific project tasks include:

- Optimizing the bottom configuration and manufacturing method.
- Optimizing a resin electrocoating technology expected to result in reduced VOC use through the application of newer pressurizing agents.
- Transitioning from pilot plant production to the installation, testing, and optimization of a full-scale production line.
- Independent testing to verify project success.
- Implementation of an extensive marketing program that targets U.S. and overseas markets.

## Progress and Milestones

- Testing and development of the prototype system was completed.
- Optimization of high-volume production equipment is proceeding rapidly.
- DCC made presentations to a number of companies, including Gillette, Colgate, and Nabisco.



NICE<sup>3</sup>—National Industrial Competitive-ness through Energy, Environment and Economics: An innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. This grant program provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Total project cost for a single award must be cost-shared at a minimum of 50% by a combination of state and industrial partner dollars. The DOE share for each award shall not exceed \$400,000 to the industrial partner and up to \$25,000 to the sponsoring state agency for a maximum of \$425,000. Each award may cover a project period of up to three years.

### PROJECT PARTNERS

NICE<sup>3</sup> Program  
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Pennsylvania Department of  
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## INDUSTRY OF THE FUTURE—STEEL

*Through OIT's Industries of the Future initiative, the Steel Association, on behalf of the steel industry, has partnered with the U.S. Department of Energy (DOE) to spur technological innovations that will reduce energy consumption, pollution, and production costs. In March 1996, the industry outlined its vision for maintaining and building its competitive position in the world market in the document, **The Re-emergent Steel Industry: Industry/Government Partnerships for the Future.***

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DOE/GO-10099-696  
January 1999