

# ALUMINUM

## Project Fact Sheet



## ALUMINUM SCRAP DECOATER

### BENEFITS

- Energy savings of 56% compared to conventional kiln decoating
- Reduced air emissions, including greenhouse gases, to levels well below permitted allowances, due to both reduced energy consumption and VOC elimination
- Improved product quality
- Reduced solid waste disposal needs from dross and oxidized product
- Decreased operating costs compared to conventional kilns

### APPLICATIONS

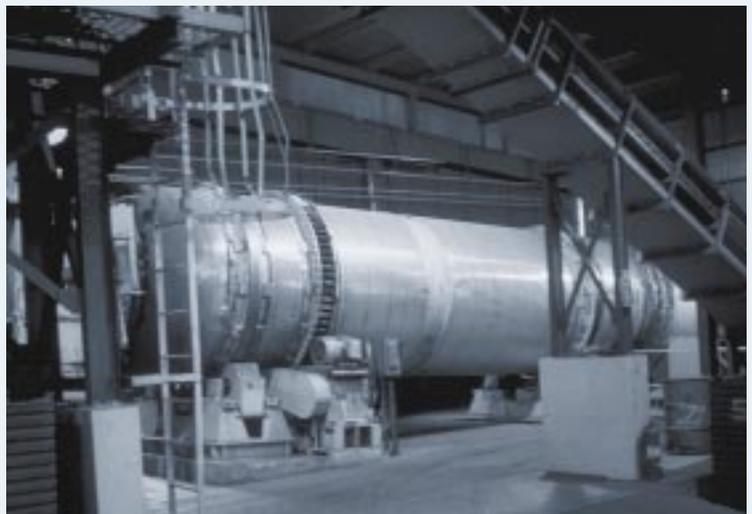
This technology is applicable to the secondary aluminum industry that processes both scrap from the manufacturing process and used aluminum into material for new products. Over 4.5 million tons of such aluminum were processed in 1994, and demand is growing as manufacturers such as car makers increase the amount of aluminum in their products. IDEX kilns may also apply when processing other materials with organic binders or coatings, such as in fiberglass recycling.

## INDIRECT-FIRED KILNS TURN ALUMINUM SCRAP INTO VALUABLE FEEDSTOCK

Since the beginning of 1997, an innovative process has been demonstrated for turning aluminum scrap from stamping plants and used aluminum into feedstock that secondary smelters can use to produce new products. The NICE<sup>3</sup> (National Industrial Competitiveness through Energy, Economics, and Environment) program and Philip Services Corporation (formerly Roth Brothers Smelting Corporation) are cost-sharing the demonstration to decoat metal using indirect-fired controlled atmosphere (IDEX™) kilns.

These kilns are different from the kilns usually used to remove machining lubricants and oils from the scrap. They are better able to process solid organics like rubber and plastics than conventional kilns. Dust formation and emission of volatile organic compounds (VOCs) are minimized. The kilns' better temperature control leads to less oxidation and less dross in the smelter, minimizing product loss. And, because the heat released during the oil combustion is captured for use in the decoating process, energy requirements and operational costs are reduced.

### IDEX™ KILN



**Indirect-fired IDEX kilns are demonstrating how secondary aluminum smelters can obtain higher-quality feedstock from metal scrap without emitting pollutants during the decoating process.**



## Project Description

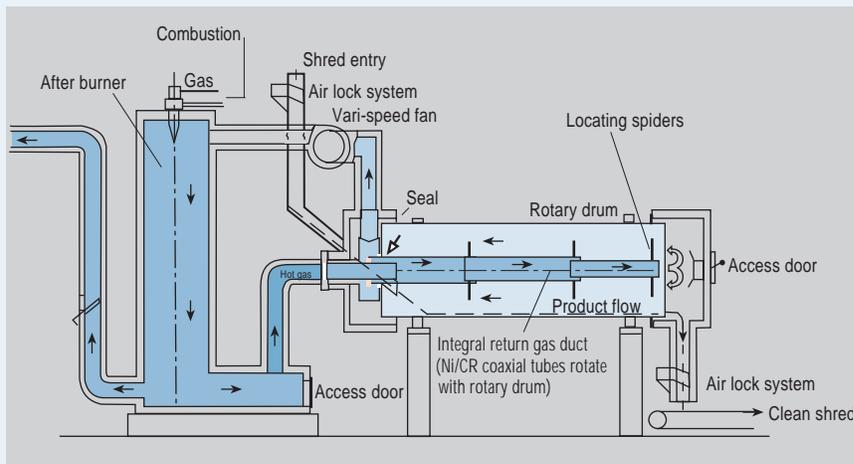
**Goal:** The goals of this project are to demonstrate the first commercial full-scale application of the IDEX kiln system, and to validate its pollution reduction, cost effectiveness, and energy efficiency benefits to the secondary aluminum industry.

The IDEX system works by dividing the decoating process into two steps. The metal is first decoated in a rotating kiln by exposing it to a high-temperature, low-O<sub>2</sub> gas, removing the waste oils without combustion or oxidization. The oil-laden gas is then combusted in an afterburner, apart from the scrap, to destroy the VOCs. The heat released during the oil combustion is then used to drive the decoating process.

## Progress and Milestones

- The IDEX system has been successfully processing aluminum scrap since January 1997.
- A cyclone separator has been added to capture fines and further reduce pollution.
- Energy Research Company is currently gathering metrics data on the system.
- A press tour of the facility took place in June 1998.

### SCHEMATIC FLOW DIAGRAM OF THE IDEX™ ALUMINUM SCRAP DECOATER



## Industry of the Future—Aluminum

Through OIT's Industries of the Future initiative, the Aluminum Association, Inc., on behalf of the aluminum 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, **Aluminum Industry: Industry/Government Partnerships for the Future.**

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**NICE<sup>3</sup>**—National Industrial Competitiveness through Energy, Environment and Economics an innovative, cost-sharing program that promotes energy efficiency, clean production, and economic competitiveness in industry. This U.S. Department of Energy (DOE), Office of Industrial Technologies grant program provides financial assistance of up to \$525,000 to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. The industrial partner may receive a maximum of \$500,000 in federal funding. Non-federal cost share must be at least 50% of the total cost of the project.

### PROJECT PARTNERS

NICE<sup>3</sup> Program  
U.S. Department of Energy  
Washington, DC  
Energy Research Company  
Staten Island, NY  
New York State Energy Research and Development Authority (NYSERDA)  
Albany, NY  
Philip Services Corporation  
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