

## Assessment Overview: Thermoplastics Manufacturer

A team of students & faculty from the IAC at the University of Delaware performed an industrial assessment for New Process Fiber, Inc. The assessment was sponsored by the Department of Energy and was led by Center Director Dr. Keith Goossen, a faculty member in the Department of Electrical and Computer Engineering. In April 2011 the IAC team employed a comprehensive assessment methodology that considered energy, waste, & process related improvements. The team examined all large energy consuming equipment & systems for potential savings. They compiled a waste inventory & investigated the potential for waste reduction or improved disposal & recycling methods. The team also examined manufacturing processes for potential improvements, & emerging technologies were assessed for potential contributions to efficiency improvements.

### Applications

The assessment personnel of the program identified and evaluated opportunities to conserve energy, minimize waste and improve productivity. In this case important opportunities for energy savings were found in compressed air, cooling, lighting and HVAC systems.



New Process Fiber, Inc., located in Greenwood, DE, is a 40,000 ft<sup>2</sup> facility that produces 400,000,000 thermoplastic parts each year.

### Summary

Through the Department of Energy's Industrial Assessment Center (IAC) located at University of Delaware, an extruded thermoplastics manufacturer was able to realize a 16.7% reduction in electricity, resulting in a 14.8% overall utility cost reduction.

### Company Background

New Process Fibre is a major supplier of non-metallic stamped components to many of the largest OEM companies in the world. They produce custom non-metallic components for almost every facet of everyday living from electronic, plumbing, automotive, defense, furniture and construction to name a few. At the time of the assessment, the plant consumed about 1,200,000 kWh/year and 220 MMBTU of heating oil. Existing plant Best Energy Practices included updated lighting and added extruder insulation.

### Implemented Recommendations

The table on the following page summarizes specific recommendations that were made during the assessment and were implemented or will be implemented in the near future. These projections of savings & capital costs identified during the assessment have been established through engineering analyses and research. As a result,

### Assessment At A Glance

- Implemented 7/11 of recommendations to save an estimated \$22,318/year
- Implemented recommendations to reduce air infiltration, increase cooling tower and compressed air efficiency, and updated HVAC equipment and lighting
- Payback periods of implemented recommendations range from 0 to 48 months, averaging 15 months

seven recommendations were implemented by the company.

40,900 kWh per year resulting in an additional \$4,570 annual savings.

this ventilation of treated air from the main plant was avoided, saving the company \$4,520/year in air conditioning costs.

**Pending Implementation**

Recommendations still under consideration include installing a variable drive on the cooling tower fan and installing fast roll up doors on the slitting room. Implementing these would save the company an additional

**Points of Interest**

The extrusion room has substantial ventilation, and was pulling air from the rest of the air conditioned plant, resulting in substantial venting of treated air. By simply adjusting the air flow into the extrusion room,

**Implemented Recommendations**

| Assessment Recommendations  | Annual Resource Savings | Total Annual Savings | Capital Costs   | Simple Payback  |
|---|-------------------------|----------------------|-----------------|-----------------|
| Update controls of cooling tower fans                                       | 10,900 kWh              | \$1,220              | \$600           | 6 months        |
| Isolate extrusion operation and main plant compressed air systems           | 5,280 kWh               | \$650                | 0               | Immediate       |
| Prevent drawing treated air from main plant into extrusion room and venting | 40,400 kWh              | \$4,520              | 0               | Immediate       |
| Install outside inlet air to compressor                                     | 6,300 kWh               | \$710                | \$100           | 2 months        |
| Replace HVAC unit with higher efficiency model                              | 5,270 kWh               | \$590                | \$7,000         | 11 years        |
| Replace lights in production area   | 60,627 kWh              | \$6,668              | \$2,500         | 5 months        |
| Fix compressed air leaks  | 71,100 kWh              | \$7,960              | 0               | Immediate       |
| <b>Total</b>  | <b>199,877 kWh</b>      | <b>\$22,318</b>      | <b>\$10,200</b> | <b>5 months</b> |