

**At A Glance:**

- Implemented over 70% of recommendations to save an estimated \$38,150
- ESCO successfully used the IAC energy assessment to supplement its energy action plan

*“The IAC visit gave us more information about reducing system air pressure in our plant. This helped us to carry out that recommendation.”*

*-William Kehoe, Plant Engineer*

# Energy

# Planning

**Assessment Overview**

A team of students & faculty from the IAC at Syracuse University performed an industrial assessment for ESCO Turbine Technologies. The assessment was sponsored by the Department of Energy and was led by Center Director Frederick J. Carranti, P.E., a faculty member in the Department of Mechanical & Aerospace Engineering. 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.

**Summary**

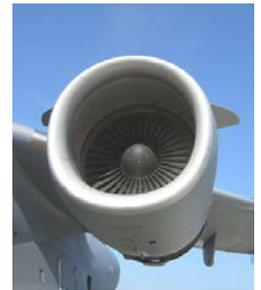
Through the Department of Energy's *Industrial Assessment Center* (IAC) located at Syracuse University, an industrial gas turbine and aerospace part manufacturer was able to realize significant savings from reductions in energy & productivity costs. Through recommended changes to the compressed air system, motor and belt upgrades, power factor correction, and automatic computer shutdown the company is saving approximately \$38,150 annually. Several recommendations are still being considered for implementation.

**Applications:**

The Syracuse University Industrial Assessment team identified opportunities to decrease energy usage, increase capacity, improve product quality, & enhance employee safety and comfort. The Industrial Assessment Center team accomplished this after conducting a comprehensive assessment of the company's systems and utility scheme. The team's goal was to identify significant opportunities for cost savings, quality improvements, & productivity enhancement.

## Company Background

ESCO Corporation is headquartered in Portland, Oregon and was founded in 1913. Through its Engineered Products Group, ESCO is a global manufacturer and distributor of technically-rich metal wearparts and components for mining, dredging and construction. ESCO's Turbine Technologies Group has operations around the world and specializes in aerospace and industrial gas turbine applications. Through its culture of "Quality, Value and Speed," ESCO is aggressively pursuing energy reduction measures and has formed internal teams to assess and implement these efforts at all ESCO locations. Building a "leaner, stronger company" through waste and cost reduction has long driven ESCO's business model, but it serves especially well during difficult economic times.



### Overview of Recommendations:

The table below summarizes specific recommendations that were identified 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, seven recommendations were or soon will be implemented by the company and are listed below.

### Implementation:

While the majority of recommendations were implemented, the company is still researching upgrading to synthetic lubricants and is looking into a liquid based heat recovery system in lieu of an enthalpy wheel.

### Mindset:

The company's energy action team had just been established at the time of the IAC's assessment. The IAC's recommendations have given the team a good starting point from which they have already expanded into a large and comprehensive energy reduction plan.



## Implemented Recommendations

Assessment Recommendations (AR)			Total			
			Annual Savings	Capital Costs	Other Costs	Simple Payback
<i>Reduce Compressed Air System Line Pressure</i>	<i>Electricity:</i>	<i>109,187 kWh</i>				
	<i>Demand:</i>	<i>197 kW</i>	<i>\$11,649</i>	<i>None</i>	<i>None</i>	<i>Immediate</i>
<i>Schedule Computer Shutdown at Night</i>	<i>Electricity:</i>	<i>89,880 kWh</i>	<i>\$7,999</i>	<i>None</i>	<i>None</i>	<i>Immediate</i>
<i>Utilize Energy Efficient Belts</i>	<i>Electricity:</i>	<i>32,648 kWh</i>				
	<i>Demand:</i>	<i>194 kW</i>	<i>\$4,803</i>	<i>None</i>	<i>None</i>	<i>Immediate</i>
<i>Repair Leaks in Air System</i>	<i>Electricity:</i>	<i>32,675 kWh</i>				
	<i>Demand:</i>	<i>45 kW</i>	<i>\$3,348</i>	<i>\$140</i>	<i>\$238</i>	<i>0.1 years</i>
<i>Install Occupancy Sensors</i>	<i>Electricity:</i>	<i>54,756 kWh</i>	<i>\$4,873</i>	<i>\$661</i>	<i>\$816</i>	<i>0.3 years</i>
<i>Install Electric Slurry Pump</i>	<i>Electricity:</i>	<i>32,675 kWh</i>				
	<i>Demand:</i>	<i>45 kW</i>	<i>\$3,348</i>	<i>\$3,598</i>	<i>\$170</i>	<i>1.1 years</i>
<i>Correct for Power Factor</i>	<i>Reactive:</i>	<i>1,134,750 rkVa</i>	<i>\$1,818</i>	<i>\$9,449</i>	<i>None</i>	<i>5.2 years</i>
	<i>Electricity:</i>	<i>351,821 kWh</i>				
	<i>Demand:</i>	<i>481 kW</i>				
<b>Totals</b>	<i>Reactive:</i>	<i>1,134,750 rkVa</i>	<b>\$37,838</b>	<b>\$13,848</b>	<b>\$1,224</b>	<b>N/A</b>

### Points of Interest:

The company was able to realize significant savings by reducing their compressed air line pressure from about 110 psig to 90 psig. Large savings will also be seen when the company's IT staff completed implementation of automatic night and weekend computer shutdown. Also, while the company did not install occupancy sensors on their vending machines, they did achieve savings by delamping ten 40 watt florescent lamps in the machines.

## Other Recommendations

Assessment Recommendations (AR)	Total			
	Annual Savings	Capital Costs	Other Costs	Simple Payback
<i>Utilize Synthetic Lubricants</i>	<i>\$1,286</i>	<i>None</i>	<i>None</i>	<i>Immediate</i>
<i>Install Energy Efficient Exit Signs</i>	<i>\$338</i>	<i>\$185</i>	<i>\$220</i>	<i>1.2 years</i>
<i>Install Occupancy Sensors on Vending Machines</i>	<i>\$644</i>	<i>\$958</i>	<i>\$51</i>	<i>1.6 years</i>
<i>Recover Exhaust Heat with Enthalpy Wheel</i>	<i>\$46,066</i>	<i>\$73,508</i>	<i>None</i>	<i>1.6 years</i>

**For More Information;  
Or to request your own energy assessment:**

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**Industrial Technologies Program**

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