

## Exercising Efficient Industrial Practices

With their commitment to helping local industry realize cost and energy savings, the Industrial Assessment Center at Texas A&M University (TAMU), led by Dr. Bryan Rasmussen and two students, performed an efficiency analysis for ICON Fitness at their manufacturing plant in the year 2013, identifying eleven recommendations for cost savings.



### Assessment Benefits

- The report identified a total energy cost savings of \$126,000 per year.
- The total implementation cost of \$92,000 leads to an average simple payback period of just over 0.7 years.
- ICON Fitness expects to implement 10 of the 11 recommendations by the TAMU IAC group.

### Summary

The Texas A&M University Industrial Assessment Center (TAMU IAC) performed a no-cost industrial assessment of the ICON Fitness manufacturing plant in Logan, UT on September 19, 2013. Eleven recommendations were made in the report, ten that will reduce electrical energy usage costs and one that targets the natural gas usage cost of the plant. Estimated savings are \$126,505/year with implementation costs estimated at \$91,870, leading to a simple payback of 0.7 years. Additionally, reductions in emissions are expected totaling 587 tons/yr for CO<sub>2</sub> and 1,064 pounds/year for NO<sub>x</sub>.

ICON Fitness manufactures work-out equipment in the United States, providing Americans with job opportunities in a time when outsourcing is the common practice. *Photo from ICON.*

### Company Background

ICON Fitness in Logan, Utah produces high-quality treadmill fitness equipment for a variety of markets. Steel as raw material is cut to length, punched, and bent into required geometries. Some pieces are welded together, washed prior to painting in a powder coat paint booth, and then stacked to await assembly. The assembled treadmills are then boxed and put onto trucks for delivery.

### Evaluation Approach

The assessment team consisted of two students and the Director of the TAMU IAC. After arriving onsite, the team met with the plant management staff, toured the facility, determined a number of potential conservation measures, and gathered data in order to quantify the impact of the recommendations. Two additional students back at TAMU in College Station Texas assisted by completing some of the evaluations. The final report was mailed to the plant November 15, 2013. The status of the implementation of

### Application Highlights

- Implemented assessments primarily focused on electricity reduction but also found areas to reduce natural gas and solid waste.
- The largest potential for cost savings was obtained by repairing compressed air leaks in the pneumatic system.
- A plant contact in a follow-up phone interview stated "What you guys did was really good [and] very helpful".

the recommendations was discovered on June 19, 2014 through a telephone conversation between the Assistant Director of the TAMU IAC and the key plant staff responsible for the follow-through efforts mounted by ICON Fitness. The plant staff seemed highly pleased with the overall assessment, as reflected by their over 90% implementation of TAMU's IAC recommendations.

**Assessments Detailed**

Eleven project recommendations were made in the report. Six of the eleven recommendations have over \$5,000/year savings each. AR #1 has recommended savings for repairing compressed air leaks around the plant. AR #2 recommends selling excess powder coat that the plant generates in the painting operation. Installing capacitors to correct the power factor of the plant’s electrical usage is detailed in AR #3. Turning off the presses used in manufacturing when they are not needed is considered in AR #4. AR #5 recommends replacing the rooftop AC units over time as

they are older and maintenance costs are mounting. The use of engineered nozzles to reduce the usage of compressed air is recommended in AR #6. Replacing the current parking lot and exterior bulbs with LEDs is the subject of AR #7. Tuning up the combustion on the plant boiler is recommended in AR #8. The savings from use of synthetic lubricants in electric motor bearings throughout the plant is discussed in AR #9. Reducing the plant compressed air system pressure from 110 to 100 psig is recommended in AR #10. AR #11 recommends insulating injection molding machines.

**Implementation Plan**

In a telephone conversation on June 19, 2014 with plant personnel it was learned that ARs 1, 2, 4, 5, 6, 8, 9, and 10 had already been implemented. ARs 3 and 7 are expected to be implemented during the summer of 2014\*\*. Only AR #11 for the use of insulation would not be implemented as it was thought that these injection molding machines are not used very much anymore and the insulation would not payback the costs in a timely manner.

**Implemented Recommendations**

Assessment Recommendations	Annual Resource Savings	Total Annual Savings	Capital Costs	Simple Payback
Repair Compressed Air Leaks	466,560 kWh/yr Demand: 2,100 kW	\$52,170	\$5,000	0.1 years
Sell Excess Powder Coat	Solid Waste: 34,520 lb	\$17,260	\$0	0 years
Install Capacitor Bank for Power Factor Correction **	Demand: 1,250 kW	\$16,850	\$22,350	1.3 years
Turn Off Presses When Not in Use	96,060 kWh/yr Demand: 432 kW	\$10,740	\$0	0 years
Replace Existing Rooftop AC Units	28,870 kWh/yr Demand: 584 kW	\$13,100	\$45,000	3.4 years
Use Engineered Nozzles	17,500 kWh/yr Demand: 500 kW	\$9,060	\$170	0.02 years
Replace Parking Lot and Exterior Lights With LEDs **	15,050 kWh/yr Demand: 75 kW	\$4,540	\$18,450	4.1 years
Perform a Boiler Tune Up	Natural Gas: 314 MMBtu	\$2,230	\$500	0.22 years
Use Synthetic Lubricants	18,020 kWh/yr Demand: 81 kW	\$2,010	\$0	0 years
Reduce Compressed Air System Pressure	7,730 kWh/yr Demand: 50 kW	\$1,110	\$10	0.01 years
<b>Total</b>	Electricity: 649,790 kWh/yr Demand: 5,072 kW Natural Gas: 34,520 lb	\$129,070	\$91,480	0.92 years