

Applications for Fiber Laser Cutting Technology

Industry: Manufacturing

Equipment: HyIntensity™ Fiber Laser HFL020



New technology streamlines centuries old tradition

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The company and products

Leader Evaporator Company, a 125-year-old company located in Northern Vermont, is the largest manufacturer of equipment used to produce maple syrup in the United States. And although Leader Evaporator makes equipment for an industry hundreds of years old, the equipment it uses couldn't be more modern. In fact, up until three or four years ago, the technology the company now uses didn't even exist.

The problem

Leader Evaporator was faced with quite a bit of system downtime. The company estimates its old system was down 15 to 20 percent of the time, so in a typical five day work week, one full day could be wasted. All that downtime, plus a cutting method that wasn't as productive as it could be, really impacted Leader Evaporator's production causing orders to pile up. In some cases, Leader Evaporator found itself having to turn away work.

The solution

Leader Evaporator turned to HyIntensity Fiber Laser from Hypertherm for a number of reasons.

First, they liked the fact fiber laser could cut a wide range of different materials including the polished stainless steel, mild steel, and aluminum it uses to build its evaporators. The ability to cut highly reflective materials was a real selling point for the company since traditional CO₂ laser is unable to cut those materials. In addition, the company was impressed with the speed and cut quality delivered by the fiber laser system.

"The combination of our Hypertherm system on an AKS AccuCut table produces very precise cuts for clean welds when assembling our evaporators," said Alan Ball the project engineer at Leader Evaporator. Another thing, Leader Evaporator liked about fiber laser was its price. Fiber lasers offer the speed and cut quality of more traditional CO₂ lasers, but due to the reduced power level requirements and more flexible beam delivery methodology, cost significantly less to purchase, operate, and maintain which is exactly what Leader Evaporator was looking for.

The benefits

Another benefit of the solid state fiber laser technology is that they require little to no maintenance since they have few moving parts and don't rely on mirrors for beam delivery. This is in contrast to traditional gas lasers which require regular maintenance. Mirrors need to be maintained and calibrated, resonators and turbines that move the gas need to be replaced, and the lasing gas needs to be cleaned out regularly because of its tendency to collect impurities. All of this maintenance adds up. One CO₂ system can cost \$40,000 per year just to maintain.

That's all changed now. Today, Leader Evaporator is enjoying record business. It posted its best year ever in 2011 and expects to meet or beat that record in 2012.

Although fiber laser is responsible for much of the increased capacity since the system experiences virtually no downtime and the cutting method is so fast, Leader Evaporator's usage of what is called an "Integrated Cutting Solution" from Hypertherm is also helping. By using other Hypertherm components alongside



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its fiber laser system – in this case a computer numerical controller (CNC) that controls the x-y motion of the cutting torch, a torch height control (THC), and advanced nesting software – Leader Evaporator was able to be up and running quicker thereby realizing the laser system benefits sooner.

“The critical components (fiber laser, CNC, THC, and software) have been engineered to work as a single system making it easier to integrate, operate and get consistent, high quality results operator to operator, shift to shift or week to week,” explains Hypertherm’s Product Manager, Douglas Shuda.

As a result, Leader Evaporator is able to take on more work since it is now able to cut more parts – in some cases up to twice as many parts as what was otherwise possible. Another benefit is that the company can now cut perfect holes that are ready to accept bolts in seconds.

“We are doing so much more today, than we’ve even done before. The ability to make precise cuts on thin stainless steel, galvanized steel, and aluminum, perform fine feature cutting, and cut perfect holes is enormous,” continues Mr. Ball, the project manager at Leader Evaporator.

“On top of that, we are saving so much time because the cuts are so good, we don’t have to spend time cleaning or doing weld prep with any of the fiber laser cut parts.”

Mr. Ball was also impressed by how easy it was to get his new system up and running. “It was much quicker and easier than I anticipated since all of the components (that defined the cutting system) used were from Hypertherm and designed to work together.”

For Leader Evaporator though, the switch to fiber laser and an integrated cutting solution means much more than better quality cuts, increased capacity, and lower operating cost. It means that instead of juggling orders and outsourcing jobs, the company is able to once again concentrate on the job it feels is most important: making the best evaporators in the business.

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