



Heat treating:

**Best handled in-house or  
outsourced?**



Deliberating whether to outsource your heat treating operations or to keep them under your own roof? It's a completely understandable conundrum. Business owners like to retain control over their operations. Maybe it's a company you've built from the ground up and are having trouble ceding control, or maybe you're just worried about how the quality of work will reflect on your company. After all, when you outsource a crucial manufacturing step, how can you guarantee your customers top-level quality? Maybe your distance from a specialized heat treating operation has kept you from sending work their way so far.

These concerns are perfectly valid. We encounter them often. But time and again we make the case that — in a world of rising costs and shrinking margins — the benefits of outsourcing heat treating far outweigh the potential costs. In reality, sending heat treating jobs to an outside source can be a great way for companies to cut costs while tapping into expertise that already exists on the market. It also increases flexibility for companies that no longer need to worry about the size or specs of their heat treating jobs. Outsourcing them to the professionals provides both peace of mind and additional capability.

## Costs just waiting to be cut

If you're dead set on keeping heat treating in-house, you're probably betting you can do it more inexpensively. But are you really considering all the costs that accompany that decision? There are things you've probably already considered such as obvious capital expenditures like purchasing equipment, renting space and hiring someone to run the furnace. But what about some of the additional costs that tend to piggyback on top of some of the more obvious ones?

Here are a few examples of some of the more commonly overlooked costs:

### **Labor**

You've already considered hiring a furnace operator, but what about supervision, metallurgical and mechanical support, and quality control and inspection positions? Have you added benefits, training and certification expenses to base salary calculations?

### **Technical Expertise**

Heat treatment isn't just heating up and cooling off metal parts. Some cycles are very complex and require extensive controls, monitoring and problem solving. As needs change, new materials may be selected for your parts. Most materials in use today require specialized processes for optimum heat treatment. The technical knowledge to manage this change is one of the most important things a commercial heat treater can do for you.

### **Support**

Sure, you've factored in routine maintenance as a recurring expense for heat treating, but how in-depth have you taken the analysis? Plant engineers for equipment upgrades and improvements, outside consultants for problem solving and energy efficiency concerns, and equipment calibration services all should be considered. How about a human resources department to help manage it all? Depending on how much heat treating you're keeping in-house, that might be something to plan for as well.

### **Operations**

You know furnaces don't run for free, but have you considered furnace atmosphere gasses, quench oil, cleaners, equipment overhaul, parts (a category that shouldn't be underestimated in its own right), quality control supplies, rework and spoilage, material handling and personal protective equipment, or other outside maintenance expenses?

### **Furnaces and Auxiliary Equipment**

Heat treating furnaces are rarely stand-alone pieces of equipment. Most require support equipment for material handling and loading, water or air-cooled cooling systems for quenchants, storage facilities for quenchants. Important consideration needs to be given to atmosphere generators and/or bulk gas storage for nitrogen, argon, hydrogen or other gases used for atmospheres and gas quenching. Most heat treating processes also require pre-cleaning and post-cleaning of the work processed.

## Maintenance

Heat treating furnaces generally start to wear and deteriorate from the moment they are put into operation. The stress of continual operation at high temperatures and cycling through a wide temperature range eventually results in furnace component failure. You can count on repairs to refractory, replacement of high temperature alloy components and maintenance of electrical, hydraulic and pneumatic systems. Sensors must be routinely recalibrated and replaced. Control systems become obsolete as industry standards change and the IT environment moves on to newer versions.

## Facilities

There's the floor space for equipment, for sure. There's storage for spare parts and product storage as well. But one of the more often overlooked aspects of facility management for heat treating is facility maintenance. Furnaces run hot and dirty. Deterioration of ceilings, floors, walls and in ventilation systems can occur more quickly than first expected, especially if you're heat treating with frequency.

## Safety

In a heat treating plant, you're dealing with furnaces usually operating at temperatures higher than hazardous incinerators. They are often full of explosive gases in close quarters with thousands of gallons of oil. Safe operation, strict compliance with operating procedures and knowing how to respond to emergencies are critical to avoid injury, property damage and loss of life. All safety systems need to be tested and repaired on a routine basis. Many repairs require the knowledge to deal with high voltage systems, or must be performed in enclosed spaces.

### **Environmental**

Waste oil disposal, quench oil spill cleanup and facility air quality permits and fees should be expected expenses in heat treating operations. But how should these be planned for? If you've been heat treating for some time, years passed can be used as benchmarks for ballparking expenses, but what about the potential for something more catastrophic? Is there a disaster plan in place?

### **Insurance and depreciation**

What effect will a heat treating operation in your facility have on your premium? Will you be able to recoup the cost of investing in your equipment when it comes time for an upgrade, after depreciation?

Experienced heat treating companies have undergone and planned for all of the above contingencies. In most cases, because heat treating is their core business, they're more well-equipped to deal with these extra costs than in-house operators.

On expenditures for things like gas or electricity, environmental compliance, labor, maintenance and replacement parts, in-house heat treating is seldom able to match specialized operations when it comes to the bottom line. And because heat treating operations can run furnaces at full loads for long periods of time, the start-and-stop of in-house shops means they usually can't compete on efficiency either.

## Standards, certifications and audits

According to the Metal Treating Institute (MTI), heat treating companies are responsible for meeting more than 30 form-completion deadlines for 12 regulations in order to remain compliant the various government regulations pertaining to heat treating.

A few of those regulations include [OSHA's Hazard Communication Standard](#), and the EPA's regulations regarding used oil, underground storage tanks and water treatment, RCRA small quantity generators and the Clean Air Act. And then there are the ones governing confined space entry, hazardous material handling, equipment lockout/tagout, emergency response and plant air quality.

The point is, maintaining compliance with the myriad regulations and certifications involved in heat treating operations is a full-time job in itself. Staying up to date on quality techniques, statistical process control, specifications and standards is another. And once certifications are earned and standards met, they still need to be maintained. Protecting certifications against audits requires a professional level of vigilance. But when losing them would threaten a businesses' sole source of income, you can bet all possible precautions are taken. Unless your business can match that level of attention to detail, it may be time to think about entrusting heat treating to someone else.

Someone who's committed to the highest level of quality standards, expertise, experience, systems, processes and customer service. Thankfully, professional organizations like MTI, mentioned above, can help businesses determine which heat treating companies are committed to such lofty standards. As the largest network of heat treating companies in the world, business owners can look at MTI's high standards for membership as a way of outsourcing the vetting process as well.

## Getting back to the business

What happens when you make the decision to outsource heat treating? You're able to focus on streamlining core areas of your business in the form of continuous process improvement, innovation and customer service. Business owners are able to distance themselves from complicated regulations, sell off heat treating equipment, reduce capital expenditures and breathe easy knowing that unexpected costs related to environmental accidents or mechanical breakdowns are a thing of the past.

The opportunity costs associated with running your heat treating operation — perhaps most importantly all the time and effort spent on conforming to the regulations mentioned above — begin to fall away. More time opens up for your company to excel where it was always meant to. You begin to see how economic laws like [comparative advantage](#) and [specialization](#), mere theory for most of us most of the time, have a concrete effect on the bottom line once you've made the decision to outsource.

When you make the decision to outsource heat treating, your business goals can once again be the front-and-center focus. Whereas, as we've seen, there are a huge number of factors to consider when budgeting for a heat treating operation (some less obvious than others), there's only one price to consider when you've outsourced the work: the cost per project.

## Let's talk

Are you ready to discuss the potential benefits of outsourcing your heat treating operations? Paulo would love to be your heat treating outfit of choice. [Get in touch with us](#) to schedule a consultation today.