



Production Efficiency

Pitfalls to Avoid When Improving
Your Production Process



Six Pitfalls to Avoid to Improve Production Processes

In the article 'Production Managers Wasting Welder Craftsmanship', we highlighted the urgency of keeping up to date with ever-changing market demands affecting internal fabrication processes.

Production processes need to be constantly reassessed and improved to achieve ongoing financial and production improvement.

In this article we investigate the following pitfalls:

- Manual thermal cutting shortcomings
- Band saw cutting machine limitations
- Why internally engineered cutting solutions often fall short
- Why incorporating extra control measures don't always work
- Why training and development investment doesn't always provide ROI
- Why outsourcing to local businesses is risky and difficult

Manual Thermal Cutting

Currently most plate cutting is performed on semi-automated plate cutting machines, while most steel profile-cutting on pipe, beam, box sections etc., is performed manually. Using semi-automated plate cutting machines and manual thermal cutting processes are both outdated methods with numerous drawbacks.

Manual thermal cutting is a labor-intensive process with a high risk for human error. Traditional methods for 3D cutting, such as applying wrap-arounds on a pipe or manually deploying initiation points, remain very unreliable. These methods represent a major threat affecting both cutting accuracy and the speed of the process. To minimize these risks, you need to be highly skilled and have extensive experience as a thermal cutting engineer. However, even if you are highly experienced, manual methods still result in numerous limitations for the cutting process.

No manual worker can realize a predefined cut as accurately as CAD software coupled with cutting machine software. Manual cutting has limits in complex design realization. Without consistent measurement and correction systems, frequent alterations and redo's are the result. Even if done accurately by an experienced worker, the resulting cuts require post-processing before they are ready for welding. Applying straight cuts without any preparation for groove welds results in limiting the number of complex connections possible as well. Furthermore, manual thermal cutting imposes limitations on material choice and dimensions. This means that not every design can be achieved.

All of the above inevitably effect the final price, which in-turn makes manual thermal cutting an unreasonably expensive technique.



“Manual thermal cutting imposes limitations on realising complex structural design. You just don’t want this.”

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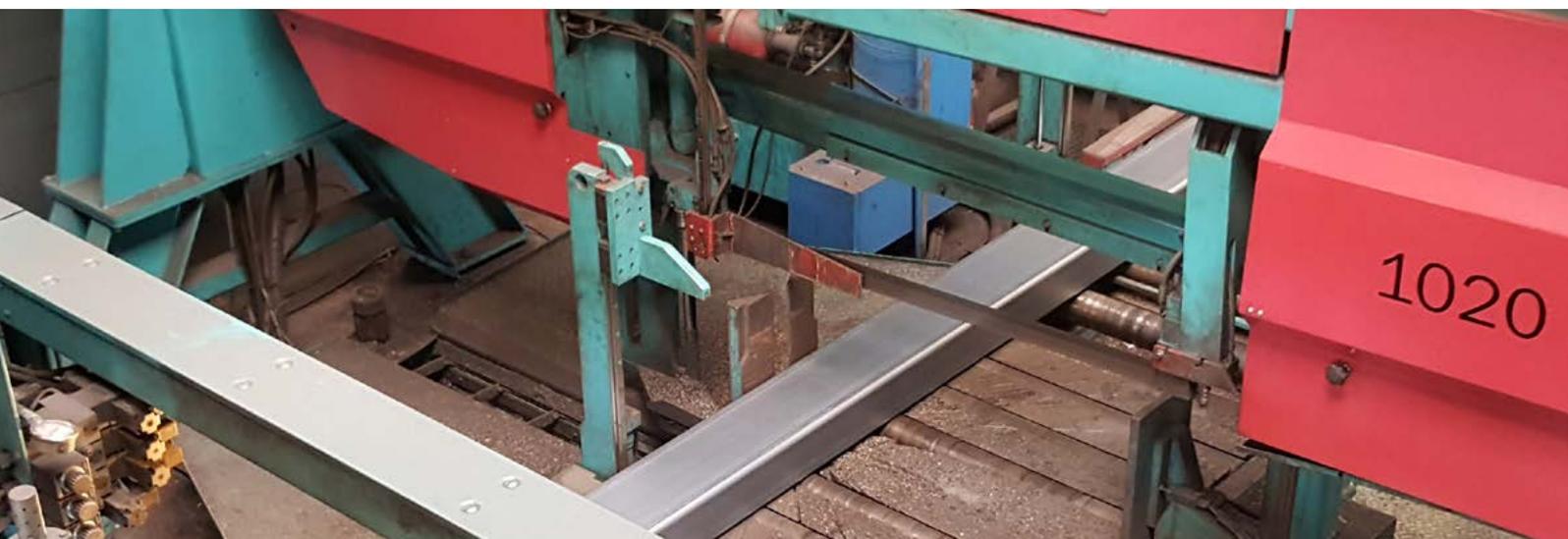
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Using a Band Saw Cutting Machine

Band saw cutting machines are particularly useful for cutting irregular or curved shapes, but can also make straight cuts. However, a band saw cutting line imposes major cutting limitations too. Not being able to apply a cutting bevel and/or a double mitre, and being limited to only 90° angles creates major drawbacks in cutting process results. Achieving complex intersections are limited.

Because of these shortcomings, band saw cutting lines need to be integrated as an extra step (more expensive than manual thermal cutting methods) and as part of the entire production process. Plus, post-processing still needs to be performed. Consequently, band saw cutting machines only represent a single step in the entire production process. They do not solve the need for post-processing.



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Internally-engineered Cutting Solutions

For those of you aware of the risks involved with manual thermal cutting or using a band saw cutting line, there is a third possibility – developing an internally-engineered solution. With enough manpower and highly skilled specialists, this option can guarantee a highly customized solution promising excellent results. However, few companies can afford this option.

First of all, it is a very costly and time-consuming process, requiring the right team of professionals who can devote time to lengthy projects. Even with an assigned budget and a tight project timetable, hidden costs and a prolonged need for project hours may arise throughout development.

Once developed, a highly-customized cutting solution needs to be maintained. A complete lack or concentration of know-how with a limited group of people makes it difficult to apply timely updates or maintenance. Finally, lack of a similar development experience beforehand often results in quick amortization and limited durability of the cutting solution.

All in all, developing an internally engineered cutting solution involves a huge investment, but successful results cannot be predicted nor guaranteed and neither can the maintenance of the situation.



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Incorporating Extra Control Measures

Regardless of your in-house cutting method, another option for improving your production process is introducing extra control measures.

The shortcomings of this technique are as follows:

- It's a time-consuming process
- It's a temporary solution
- The possibility for errors increases down the line
- Adding bureaucracy adds problems
- It does not improve the quality of your process in the long run

“Quality control is the only way to assure the quality of the product meets the customer requirements although it’s time consuming.”



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Investing in Training and Development of Your Work Force

Besides introducing extra control measures during the production process, you could also put extra effort and techniques into enabling your workforce and empowering them:

Employing extra work force

Employing extra workforce comes at an extra price. Not only can you expect higher permanent expenses, it may also take a long time before you see results because of the steep learning curve. Plus, as production manager, you know that good professionals are not easy to find.

Training existing employees to further master their craftsmanship

Even though investing in your current workforce may seem like a long-term solution, there are several pitfalls that should be taken into consideration. First, you must continue that investment to retain the knowledge. That means a large investment in both time and money. Then, consider the risk of losing employees once they've finished their training or because of retirement?

Increasing the budget for employee salaries

Often increasing salaries only works short-term to keep and motivate employees. Therefore, it is not a sustainable solution in the long run.



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Outsourcing to Local Businesses

One last remaining option to improve your production process is to outsource some of the fabrication work, e.g. cutting, to third parties in your area. However, the risks are high because you have no control over the process and cannot safeguard results within tolerance.

Preferably the company you are outsourcing should have all the necessary fabrication quality certificates (e.g.: ISO, Lloyd's and Declaration of conformity NEN). Unfortunately, those companies are not always easy to find within arm's reach.

To sum it up, the option of outsourcing some of your production work to a local business is a sustainable solution only when you work with a reliable partner with proven experience in your type of production.



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How Can You Avoid All Those Pitfalls?

Is there a long-term alternative? Find the answer to these and more questions by reading the article 'Winning Practices for Improving your Production Process'.

Consider outsourcing? Let us do the cutting!

You'll receive a ready-to-weld package, so you can focus on fast & easy fitting and welding. HGG provides a range of pipe cutting services to help you cut any shape on your steel tubes or other profiles with utmost accuracy and with a bevel and plate slots. The CNC cutting machines are also developed and produced by us.

Downloads

- Article ['Winning Practices for Improving your Production Process'](#)