



Production Efficiency

Winning Practices for Improving
Your Production Process



Winning Practices for Production Process Improvement

How do I, as production manager of a steel fabrication company improve departmental production efficiency? How do I choose whether to invest in automation or to a third party? Or a combination of the two?

After having made a thorough check of the current situation at your production department you are now ready to prioritize. Which problems need tackling first and how to solve the most pressing production bottlenecks? Bottlenecks lead to delays in production, supply overstock, pressure from customers and low employee morale. Those setbacks can eventually escalate into problems in production capacity, further growth, achieving high quality results, and more.

In order to stick to a strict goal of increasing production efficiency, first you need a plan. The following topics in this article will help you in outlining your plan.

This article will help answer crucial questions:

- How do I improve production department efficiency? 8 Winning Practices.
- How do I implement the 8 practices?
- How do I choose whether to invest in automation, outsourcing or both?
- How do I select the best consulting partner?
- How do I measure my success?

How Do I Improve My Production Department Efficiency?

The following 8 practices will help you improve your production department efficiency:

1. *Digitalize your workflow*

The first step in digitalizing is to ensure seamless integration between the CAD system and your cutting machinery in order to get cuts as predefined during detailing. Secondly, you have to create CNC cutting files that you can cut directly on your machinery.

Avoid mistakes in production and save on material costs and re-do's by using a tool (a 3D viewer) for previewing the cutting path before the part is being cut

2. *Reduce grinding to a minimum*

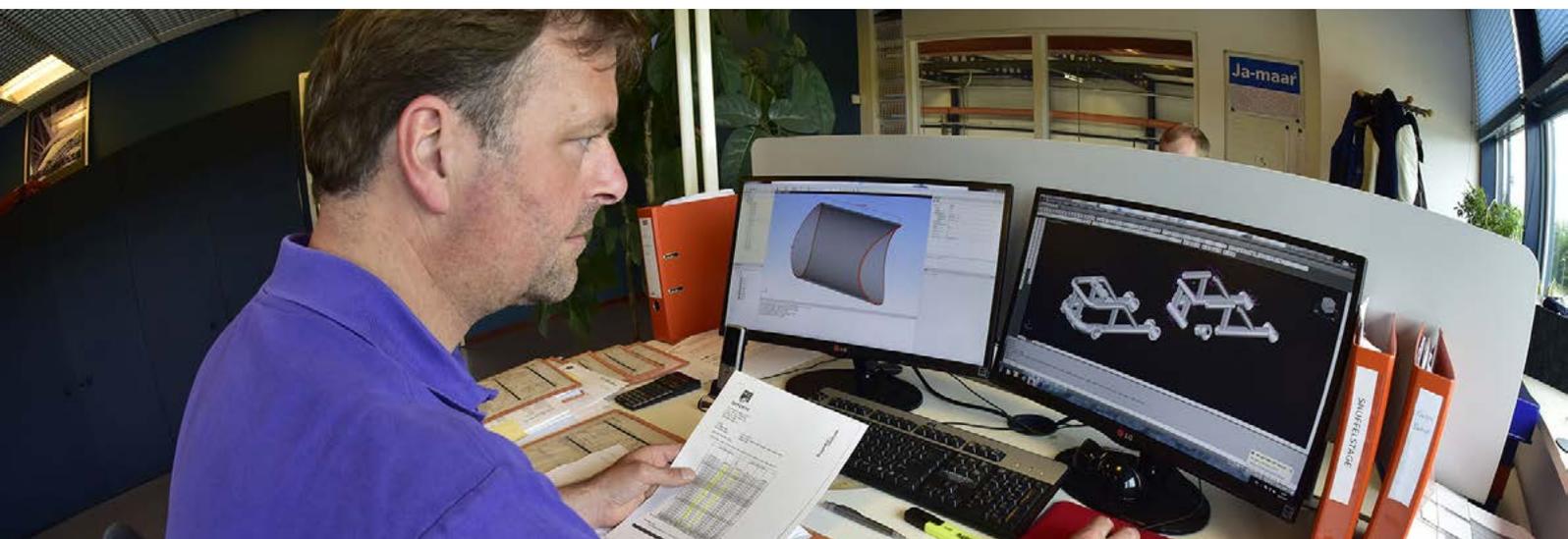
Deploy smart cutting routines so that only a grinding touch-up would suffice. Also realize highly accurate cuts will greatly reduce grinding.

3. *Reduce the weld volume*

You can greatly reduce weld volume, which will save you time and costs by working with software that allows you a choice of different bevel types.

4. *Eliminate heavy physical labor*

Reduce manual lifting of heavy material to a minimum at your production department by using cutting machinery with automated infeed and outfeed logistics systems. But also minimize strenuous grinding work by ensuring highly accurate cuts.



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5. Increase cutting accuracy

Manual cutting is often a process that is low on accuracy and highly prone to human error, which eventually affects fitting and welding. Make sure you replace manual work with automated solutions wherever possible, in order to speed up and simplify fitting and welding processes.

6. Safeguard your know-how

Secure your company knowledge with software solutions (developed in-house) and regular training of your employees. Consult industry experts to gain new insights.

7. Make sure your production process meets certification requirements

When outsourcing, find a company that offers certified services (e.g.: ISO, CE, AWS, DNV). If you decide to invest in automation, find a company that has products that are certified.

8. Eliminate human error

Introduce regular trainings for your employees to improve their skills and secure their work safety. Substitute manual labor with automated solutions in order to ensure consistent quality results.

Now that you are aware of the eight practices to help you improve production department efficiency, it is important to learn about the three options you have to achieve them.



How do I implement the 8 practices to improve efficiency?

Basically there are three ways to implement the eight practices for improving departmental efficiency:

- A. *Invest in automation: buy (or rent) a CNC cutting machine.*
- B. *Outsource: let others do the cutting for you.*
- C. *A combination of A and B.*

How do I decide whether to invest in automation, outsourcing to a third party or a combination? The options are clear, but how do you make the right decision? What is the best option for your particular situation and your production department? The following 8 tips will help you in selecting the best possible option:

Level of urgency

How soon do you need to improve production efficiency at your company?

Soon: We have an urgent need to implement changes because we are already losing opportunities (potential orders, customers, profit etc.).

- Best option: B) Outsource

In the future: Our production efficiency is stable at the moment but we want to improve and make it future-proof.

- Best option: A) Invest in automation or C) do both (outsource and invest).

Production volume

What is the production volume in your production department?

High: The amount of cutting that we have at times is very high. It requires implementing multiple shifts of production for certain periods of time. If high production peaks occur frequently, the costs of the logistics will increase incrementally as well.

- Best option: A) A better option in this case would be to invest in automation

Low: When outsourcing, there is no minimum to the size of your cutting order. This means you could outsource having as little as just one cut piece.

- Best option: B) Fully or partially outsource.

Company general business strategy

Do you want to produce as much as possible in-house? Or do you prefer outsourcing only part of your production to a third party?

We want to focus only on what we are best at and outsource the rest of the production processes (e.g. welding, cutting etc.). In this way we avoid risk and we safeguard our lean production process.

› Best option: B) Outsource.

We believe in doing as much as possible in-house and we want to maintain this strategy in the future too. In order to stay ahead of competition we need to invest in automation.

› Best option: A) Invest in automation

Budget and resources

What is your available budget and resources? Are you considering a long-term investment? Or do you need a solution for just the time being?

We have a limited budget at the moment and we are therefore not ready to undertake a big investment.

› Best option: B) Outsource.

We are looking into a long-term solution that requires production automation. We think this will offer us better ROI after only a short amount of time.

› Best option: A) Invest in automation.

Production facility capacity

How big is your production facility? Is there enough space to store material or accommodate extra machinery?

We have enough space at our production facility to store material, accommodate extra cutting machinery and free up workspace if necessary.

› Best option: A) Invest in automation or C) Both.

We have limited facility space and we cannot accommodate extra cutting machinery or free up extra workspace.

› Best option: B) Outsource.

Internal logistics available

What is your internal logistics capacity? Is there a well-developed order between the production stages of the process? How many material handling units (e.g. forklifts, overhead cranes) do you have?

We have the necessary internal logistics capacity to expand our production process in the near future and to eventually accommodate extra machinery.

- › Best option: A) Invest in automation or C) Both.

We have a limited number of overhead cranes and forklifts that serve only our current logistics needs. We don't have the necessary logistics capacity to expand our production process in the near future.

- › Best option: B) Outsource.

Cutting quality

Are you satisfied with your current cutting quality? Do you have enough welding capacity? Highly skilled welders are a scarce resource and welding is a costly process. By applying weld preparation during the cutting process, you can prepare your material for fast and easy fitting and welding.

The cutting quality of our material is very high and therefore helps us save on welding.

- › Best option: B) Outsource or C) Both.

The cutting quality we get through outsourcing, or as a result from cutting in-house is not constant and often poor.

- › Best option: A) Invest in automation.

Geographical location

Where is your production facility located? Your production facility geographical location puts certain limitations on the choice of production processes outsourced to third party work sources.

There is a reliable cutting subcontracting company in our area.

- › Best option: B) Outsource or C) Both.

We do not have any reliable cutting contracting companies in our area.

- › Best option: A) Invest in automation.

How to Select the Best Consulting Partner?

How do I choose the company to help me improve my departmental production efficiency? Regardless of the choice you make to improve your production efficiency, choosing a company that provides the right solution for you is essential. So how do you accomplish that and find a suitable partner that will minimize the risk of your investment?

Here is a checklist of seven features you should pay special attention to when choosing a company that will provide the best possible solution to achieve higher production efficiency:

1. Check the company track record

Years of relevant experience and an elaborate list of satisfied customers are (without a doubt) a must to check before engaging in further cooperation. A company active on the market for many years has proven its ability to stay ahead of competition, while continuing to provide innovative technological solutions. What proves to be most important though, is listening to existing customers. One way to look for information on what customers have to say about a company is to go through reference materials, including testimonials, customer cases and articles.

2. Select a company with a global customer support and distribution network

An extensive customer support network is essential for solving urgent issues on time. Quick and efficient fixing of minor errors are offered solely by companies with enough customer support capacity and experience.



“With the 24-hour support, any issue is a phone call or an email away.”

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3. Make sure that you find a good match with your existing processes

Before outsourcing your cutting job, check if the company provides services such as packing and transportation. Material bundled or crated per sub-assembly and delivered in a timely manner, such as a ready-to-weld kit, may have a huge influence on meeting your production deadlines.

A seamless integration between the CAD system and the cutting machinery makes it possible to execute cuts as predefined in the original design.

4. Select a company offering a wide range of products

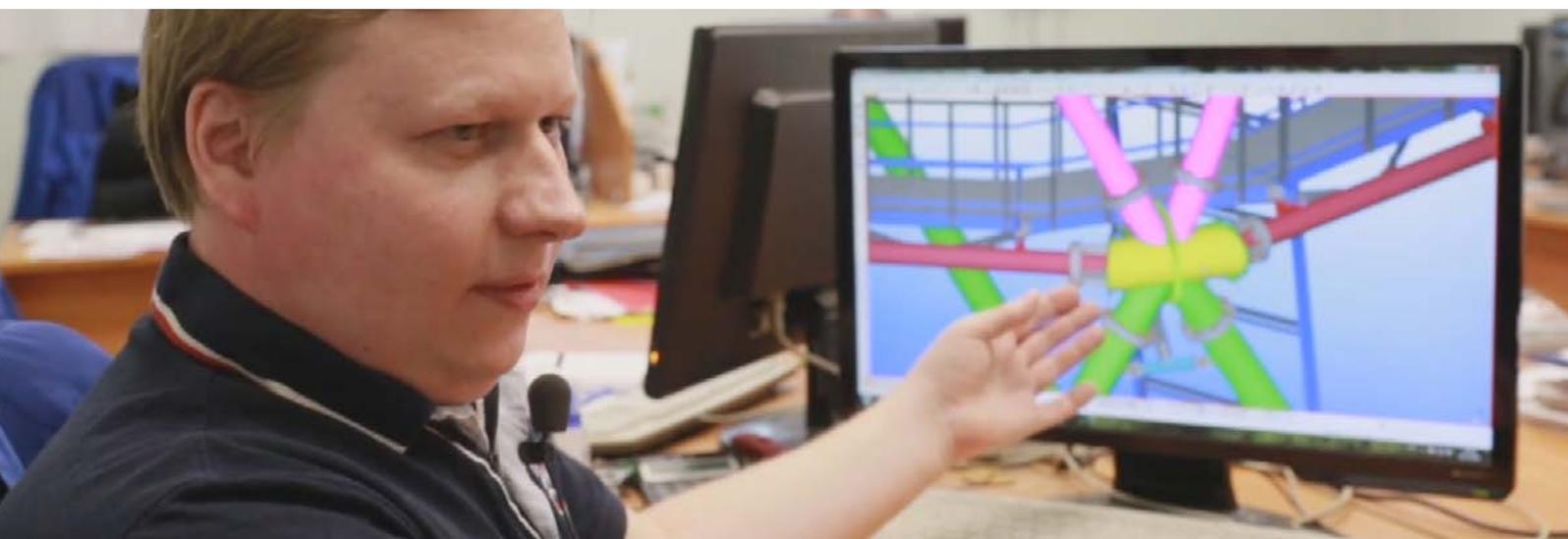
Whether you choose to invest in automation or outsourcing to another company, you don't want to be restrained in material size and profile cutting ranges.

Well-established Companies with a varied product portfolio are capable of fulfilling all your cutting needs. They typically can offer a wide range of sizes and shapes such as shim plates and multiple profile connections. They can also cut from various raw materials such as carbon steel, stainless steel, duplex, aluminum or other alloys.

5. Focus on a solution that makes welding easier and faster

Welding typically results in stronger, lighter and cheaper structures, compared to other joining methods such as bolting or riveting. That is the reason welding is, and will remain, the preferred joining method in the near future.

While employing a larger work force may be a common way to achieve higher productivity, the increasing shortage of welders imposes challenges for production.



An alternative to employing more welders is to prepare steel parts for fast and easy welding. Reducing the weld volume and having parts fit perfectly undoubtedly eases the job of the welder.

6. Choose a company that provides everything you need from A to Z

Along with purchasing or renting cutting machinery or outsourcing your cutting job to another company, you need to take care of all accompanying production demands. Experienced professionals can offer you customized solutions for your production needs and advice on the rest of the production steps, including design, detailing and welding. If you decide to outsource your cutting job, you can reduce lead times by timely packing and transportation services, as well as sufficient machinery and manpower. The opportunity to cut on-site can be crucial when extra large material is required.

7. Choose a supplier that offers both 3D cutting machines and services

A company that uses its own 3D cutting machines for subcontracting services is undoubtedly the best option there is!

The combination of both developing and using the machines on a daily basis is the fastest way to improve existing technology and innovate. Machine developers receive valuable feedback from machine operators on a regular basis, which in-turn accelerates the process of updating machinery features.

In other words, a company that uses its own experience to build machines is also its most critical customer. Search for one and embrace the advantages that the combination offers!



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How do I measure success in increasing production efficiency?

How do I measure the success of my efforts in increasing departmental production efficiency? What are the possible results?

In the article 'Invest in Automation to Improve Production Efficiency' you can read how the Russian superstructure fabricator, Kurganstalmost, managed to handle large volumes and complex designs by automating their cutting process. The article 'Outsource Cutting to Improve Production Efficiency' tells you the story of Hollandia, a Dutch market leader in metal superstructures. Read how they managed to save many grinding hours by outsourcing the cutting process.

Downloads

- Article ['Invest in Automation to Improve Production Efficiency'](#)
- Article ['Outsource Cutting to Improve Production Efficiency'](#)