

A man with long dark hair and a beard, wearing a black suit and tie, is sitting on a grey armchair. He is smiling and looking up at a basketball he is balancing on his right index finger. The basketball is a Spalding NBA ball. In the background, there is a beige sofa with cushions and a patterned lampshade.

# GET BACK TO MAKING MONEY

As Competitively As You Used To!

By Maurizio Porta



# WELCOME to the world of PORTA PRODUCTION

## *The author's voice*



*"Hi!*

*I am **Maurizio Porta**, CEO of Porta Solutions and trainer at Porta Production School, where I explain competitive methods of production for the world of the users of Machine Tools for metalworking.*

*After more than 25 years of experience in this field, I developed and designed my method, the **PORTA Production Method**, to help production companies that use Machining Centers and Transfer Machines, to reduce waste, increase profit and become more competitive."*

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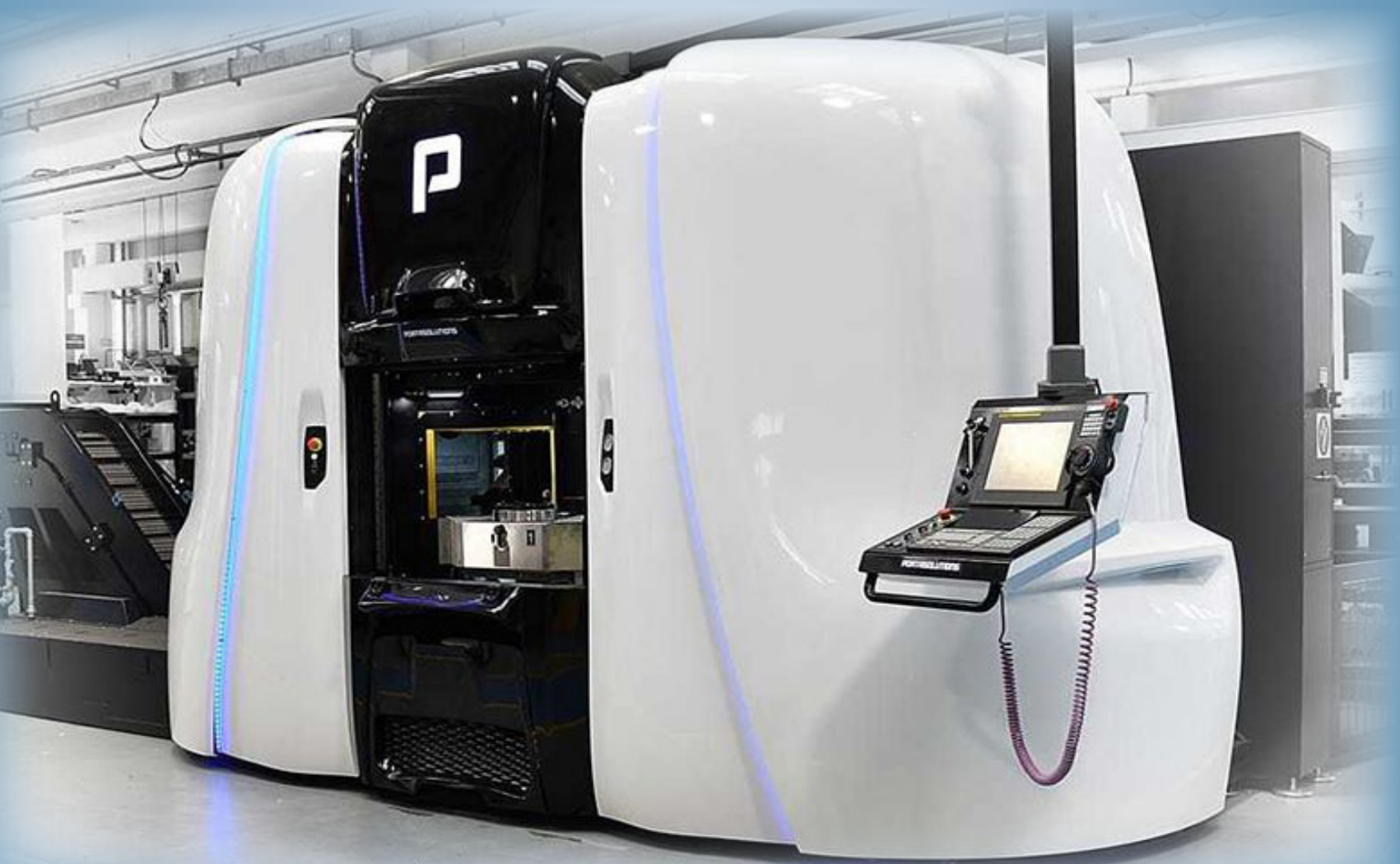
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# QUICK SETUP: A TECHNIQUE KNOWN TO FEW

*One of the most destructive elements causing the most damage in any production company is **LACK OF PREPARATION.***

Being unprepared is like having a virus roaming around your departments, ready to sink your company like the Titanic as soon as something unexpected happens.

A lack of efficient techniques and procedures are the cornerstone for failure in the vast majority of companies, which never become competitive and, in the most extreme cases, have the unhealthy habit and conviction that resolving situations “on the fly” is the best way to deal with problems.

Every action and movement in a production department must absolutely be analyzed and optimized in order to achieve continuous improvement, eliminate activities with no added value and increase overall department efficiency.

And when I say “every action and movement,” I mean nearly obsessively standardizing and creating efficient procedures for everything, with no discrimination whatsoever. And this is what most production departments are missing.

Procedures, techniques, efficiency.

**Plan, act.** To stay competitive in a market that is increasingly aggressive and geared towards a “Just in Time” approach to production, when faced with the growing requests of small-medium batches, it is essential to act by making even the unpredictable predictable, leaving nothing to chance.

If you use Machine Tools for metalworking, there are several fronts to consider and optimize to make your production more efficient.

Of these, one fundamental aspect to examine thoroughly is **production change**, generally known as “**setup**.”

*“Reduce costs.  
Improve performance.  
Increase department  
efficiency.”*

A production system’s flexibility, responsiveness and efficiency are strongly affected by long tooling and setup times on machines and systems. This issue is made increasingly critical and significant for companies by the continuous reduction in production batch sizes and orders.

Long tooling times can significantly affect margins and profits on job orders and, at times and in the most extreme cases, it can also jeopardize business continuity.

Spreading this waste of time over a year of work, you might be surprised by the competitive disadvantage this often reveals, to the detriment of our companies.

**What can you do?** The quickest, highest-performing technique in terms of setup is surely “**SMED**” (Single Minute Exchange of Die), a method integrated in the theory of Lean Manufacturing, which aims to reduce internal and external machine setup time, **cutting costs** and **improving performance** without resorting to excessively expensive and often useless technology.

The goal is to quickly switch from one production to another on the same system.

Reducing time means eliminating a fundamental component that does not give added value to the finished product, that is, downtime for machine re-tooling.

In fact, diversified production with smaller batches at the base of Just in Time manufacturing has the disadvantage that, as soon as an operation starts to take off, production has to switch to a different batch and a new setup.



# With SMED, setup between different-sized batches is no longer a problem.



This operating method is at the base of the PORTA PRODUCTION METHOD, which helps sustain a Pull rather than Push logic, whereby products go into production based on real orders without creating stock.

SMED stands for "Single Minute Exchange of Die."  
In layman's terms, a "quick change with no downtime."

The great innovation of this methodology lies in drastically reducing the time required to carry out a setup operation to a single digit, that is, a time span of less than ten minutes.

SMED was born in the Automotive industry, and was then applied in all the industrial sectors, marking a turning point on how to deal with the problems of part changeovers and setup on machines and systems.

Therefore, the goal is carefully designed setups in just a few minutes.

PORTACENTER, the first Machine Tool with 3 independent spindles, reaches this goal using methods that allow changeovers in a mere **37 seconds per station**.

This translates into **less than 3 minutes** on 3 stations for the total setup.

**Practical application.** Let's look at an example of a machining operation for CW724 brass components intended for the energy sector, remembering that brass without lead is quite a complex material to process and requires more powerful and higher-performing systems to reach the desired level of finishing quality.

Porta Solutions has designed a quick-changeover system with jaws and that requires no wrenches, implementing strategies that reduce the skills required of a machine operator to complete a setup.

The great advantage compared to Machining Centers is having a single jaw per pallet. This reduces the cost of tooling and setup time.

Specifically, the benefit lies in considerably reducing stock to produce only what has been sold and reach remarkable production flexibility.

Subsequently applying Lean Manufacturing concepts reduces lead time.

Reaching this type of result means having a Machine Tool with 3.5 times greater output than a single Machining Center, maintaining a high level of flexibility and drastically reducing downtime and inefficiency.

Changing, innovating, maintaining a corporate and manufacturing

*"Porta Solutions has designed a quick-changeover system with jaws, reducing costs and setup time."*

framework that keeps up with the times, and meeting the needs of a constantly changing market are vital for a business.

Do you want a competitive, lucrative manufacturing business? You have to accept change as a positive part of the company's growing process.

Applying SMED can change your manufacturing process and make it quick and efficient, switching from your current production installation to a new framework in which each setup requires no more than 10 minutes.

Restoring added value turns into profitability, marginality and a greater competitive edge for the business, which is better able to meet the needs of a fast-changing market.

## HOW IS SMED IMPLEMENTED?

The **first step** is analyzing the current setup process, clearly and critically identifying which activities are carried out with the machine stopped and which, instead, are (or could be) carried out in "masked time," while the machine is running.

Activities carried out with the machine stopped are defined as IED (Inside Exchange of Die); instead, activities carried out while the machine is running are called OED (Outside Exchange of Die). For example, preparations and transporting equipment, tools, and parts can be carried out while the machine is running. Assembling machine parts, on the other hand, is an activity that can only be carried out when the machine is stopped.

If you manage to organize the setup in a logical, orderly manner, properly separating the IEDs from the OEDs, you get a reduction in the internal setup time ranging from 30% to 50%.

The **second step** aims to convert as many IED activities to OED. This is probably the overall most important step because otherwise it would not be possible to bring setup time down to around a few minutes.

In an ideal production framework, the only activities carried out when the machine is stopped are tool and machine disassembly, assembly, centering and adjustment.

EXECUTION TIME

00:37

37 SEC x 4 PALLETS  
**148 SECONDS**  
**LESS THAN 3 MINUTES**



The purpose of the **third step** is to identify which process changes to implement to convert “internal” activities into “external.” These changes mainly involve tools, procedures and work methods.

The **fourth step** entails optimizing work methods and standardizing functions. We’re talking, in fact, about functional standardization. To obtain significant improvements, only and exclusively standardizing the parts used for setup is sufficient. For example, implementing quick changeover for tool coupling streamlines fastening procedures and speeds up the various setups; replacing threaded fasteners with quick fastening systems speeds up clamping operations; using intermediate jigs on the equipment accelerates setup time, maintaining the original equipment.

All this guarantees considerable savings in terms of time and, therefore, money.

In addition, adopting parallel operations means work that was previously done by a single worker is now done by several people.

*“Eliminate first and only adopt parallel operations at the end.”*

This technique reduces how much an operator needs to move, which makes it easier to carry out the activities, taking advantage of the motivational factor and the lower amount of effort required.

***Warning!*** It is important to implement this technique **ONLY AT THE END**, when everything has already been reduced as much as possible, in order **not to adopt unnecessary parallel operations, using multiple operators.**

The advantages gained from implementing SMED can be summarized in the following points:

- Greater flexibility
- Much quicker tooling/setup time
- Higher productivity in less time
- Greater customer satisfaction
- No excess production (and, therefore, no stock)
- More organized operator work



# WHICH IS BETTER: A TWO-STEP TRANSFER OR A ONE-STEP FLEXIBLE MACHINE?

Once again from the standpoint of maximizing a department's production efficiency, this dilemma often involves Machine Tool users.

And you know why? The reason lies in a "grey area" where the right answer is **counterintuitive**.

In the case of large volumes, with millions of pieces to be produced to fulfil contracts, the best choice is undoubtedly the Transfer.

In other cases, however, the best solution is often more complex and seemingly confusing.

I have personally seen customers buy super high-performing (but very rigid) Transfer machines on account of their impressive cycle times, focusing just on this aspect.

This may appear to be an excellent solution, but in many cases, it requires operators to retool the same machine again to perform a second operation, and they find themselves having to add up the cycle time from step 1 and the cycle time from step 2.

Adopting this approach is very risky because, according to the new market rules, we must not focus solely on the fastest cycle time of each step (undoubtedly important), but also and above all on time to market.

## What is Time to Market?

It's the time that elapses between the start date of the order and the moment of delivery, invoicing, and payment.

According to the most advanced production techniques, this time must be as short as possible in order to immediately complete and guarantee more fluid deliveries and generate cash (liquidity) for your company.

A business model involving the use of (Transfer) machines that need to be tooled for step 1, produce a large batch, be retooled for step 2, and restart production leads to a very long time to

market and delayed payments.

You have to financially anticipate the entire large batch for this often very long timeframe.

**All this to the detriment of cashflow.**

By changing the business model and aiming to produce only what is sold, albeit more slowly and making the first deliveries immediately, you are operating in a way that is more financially sustainable and more satisfactory for your customer, who receives the goods progressively.



On the next page, I'd like to give you the testimonial of a customer of mine who bought 3 PORTACENTERS and adopted this production method, switching from the two-step Transfer model to the 3-spindle philosophy.

As you can see, you'll find the details to call the person who wrote this testimonial, and ask any questions you may have to better understand this counterintuitive but WINNING business model!



# GIACOMINI

WATER E-MOTION

“ *We had complex machining operations which required several processing steps on our transfer machines, including long and complicated setups. Furthermore, at a qualitative level, it was not always possible to obtain the best result, especially considering the risk of performing manual deburring operations.*

*Thanks to Porta Production Method, it is possible to combine processing operations and this allows us to work on even very complex pieces in a single clamping, with simpler and faster setups, even eliminating any subsequent deburring problem. Again, thanks to this Method, we have considerably reduced the lead time of items that were previously processed on transfer machines in several operations, even though sometimes the cycle time may be higher.*

*However, this problem can be solved by having the parts immediately available and thanks to the fastest setup times.*

*Furthermore, the quality of pieces produced is significantly improved, eliminating deburring and quality control issues.* ”

**Vincenzo Crocco**

**Production Manager**

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Do you use Machine Tools for metalworking and want to maximize productivity and flexibility starting from **quick setup**?

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Get in touch now to request your **FREE** consultation with one of our **TECHNICAL TUTORS**.

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To learn more about  
Competitive Production  
and PORTA Production Method

**CLICK HERE**

[www.machiningcentersbook.com](http://www.machiningcentersbook.com)

My book dedicated to users of machine tools for metalworking who want to make the leap in quality, is waiting for you!!!

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To your results,

***Maurizio Porta***

**Master Trainer PORTA PRODUCTION METHOD**







# PORTA

PRODUCTION METHOD

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