



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 in battery and Twin-spindle Centers to reduce the piece cost, become more competitive and win more orders."*

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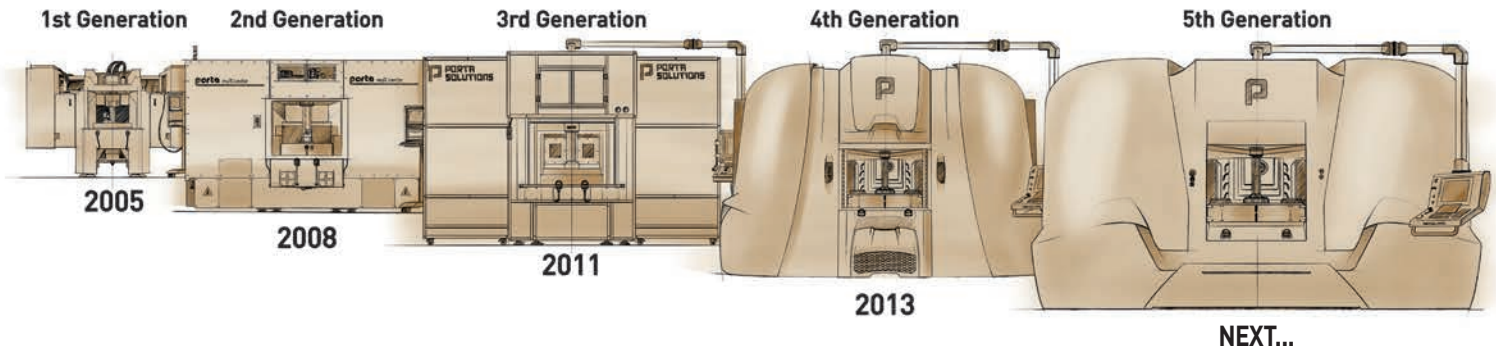
ONE TECHNOLOGY. TWO MODELS.



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TO SUFFER OR TO ATTACK?

PORTACENTER



According to *Wall Street Journal* economists, the intense post-pandemic economic recovery will fuel a sharp rise in prices, not just in the short term but also in the long term.

Bottlenecks in the supply chain, higher shipping costs together with the explosion of energy costs could be the trigger that will increase the piece cost more and more.

In fact, there are many companies that report a constant increase in production costs due to the increase in the costs of raw materials, energy, labor.

If you too find yourself in this scenario, have you ever thought about how to deal with the current market situation?

Few say it frankly, but the truth is that there are only two possible ways to follow:

1. to SUFFER
2. to ATTACK

The situation is becoming very serious and for this reason it is essential not to suffer, as 90% of companies will do, thinking that there is no other solution. On the contrary, you need to have a plan B with which to attack, containing costs compared to competitors in order to win more orders.

Plan B is a great opportunity. The opportunity to obtain the best piece cost of your product, gaining more market share and thus giving your competitors a push.

Another fundamental and decisive element to win this battle is time. "Time to market" is the performance indicator that measures the lead time of a product or project. In other words, it is the time interval that goes from the moment a new idea is born until this idea becomes reality.

Typically in this point, the reality, 99% of projects drifts, because they are excellent on paper, but not feasible and sustainable in terms of time.

That's why the delivery time of the machine is crucial in the choice of the machine itself.

Before buying a machine, it is important to understand your business model and if you need to change it.

Are you a user of machining centers in battery or twin-spindle centers for metalworking and do you want to know how to reduce time and costs to win more orders?

If so, you are in the right place and I suggest you keep reading...

Past, present and future. Looking at the time line, in the world of metalworking we can identify three main industrial eras that have characterized the manufacturing sector.

The first age is that of the decade following the Second World War, which coincided with the development of machine tools for considerable productions, i.e. solutions aimed at the need of companies to satisfy a rapidly growing demand and large batches. In fact, right at that time, in 1958, the first Porta Transfer was born. We talk about mass production, economic boom, companies structured to produce large volumes.

The transfer machine is perfect to produce big batches in a short time and with a very low piece cost.

The second age coincides with the world economic crisis (2008-2009). Companies, used to producing big quantities and managing overproduction with stock, had to deal with the collapse in demand, putting an end to this kind of approach.

Thus the third age, that of mass customization, began. Customization was not so much in the product, but in the quantity of pieces required. Today we work on batches by splitting them according to actual needs, producing only what is needed and repeating operations from week to week, from month to month.

History teaches us that it is not possible to stand still and continue to produce “as we have always done”. Or rather, you can do it, but this

means paving the way for failure. It is necessary to constantly control production and define the best way to work in light of market changes, which are increasingly relevant and fast. And, if needed, it is necessary to take into consideration different tools and methods, such as flexible production, aimed at reducing waste and, therefore, costs (starting from the stock).

WHY THE 3-SPINDLE MACHINE TOOL

For many (if not all), as always, the most difficult obstacle to overcome is the change of mentality and method.

Why should companies that have worked profitably for decades need to consider doing better by changing their approach?! Because, as mentioned, if you don't, you get rid of yourself!

Thus, by introducing the first 3-independent-spindle machine tool, the PORTACENTER, my team and I dealt with our only enemy: the change.

I understood that it was necessary to change our approach: first of all the Method, then the machine as a tool to achieve the solution. One of the pillars of my method is the reduction of waste (starting from the stock) to reduce overall costs, and therefore the piece cost, and win more orders.

If traditional transfer machines are successful on big batches (from hundreds of thousands up to millions of pieces), machining centers are the flexible machines par excellence. However, they have limits in productivity with increasing quantities.

To overcome this situation,

manufacturers of transfer machines have tried to develop (with little success) flexible machines, starting from their high-productive solutions.

At the same time, manufacturers of machining centers have tried to design more productive machines such as twin-spindle centers, FMSs and so on. However, the former had to increase costs to add features, while the latter had to give up some of their flexibility in favor of productivity.

The solution with 3 independent spindles, like the PORTACENTER, was created precisely to meet this new need. Avoid adapting existing machines,

but take advantage of the underlying technologies to integrate them into a machine and in a single process. In fact, the result is a machine that combines the rotary indexing table of a transfer, with three working stations plus one for loading and unloading, with the operating units of machining centers.

Furthermore, the PORTACENTER is built in series, according to a plan coherent with the market demand; this results in benefits in terms of reliability, purchase cost of the machine (unchanged since 10 years) and delivery times (on average 120 delivery days).

Technical features of the PORTACENTER. This machine tool has an electro-welded steel stabilized monobloc structure, with three cast iron operating modules rigidly connected to the walls. The self-supporting structure avoids having to build special (invasive and expensive) foundations.

Speaking of batches, this innovative solution gives the best when it is necessary to produce between 500 and 5,000 pieces: it is an indicative value, depending on the complexity of the pieces and the user knowledge of this technology; there are cases in which it may also be suitable for machining

*A solution that
combines the flexibility
of machining centers
with the productivity of
transfer machines.*

a hundred pieces or up to 10,000 and more.

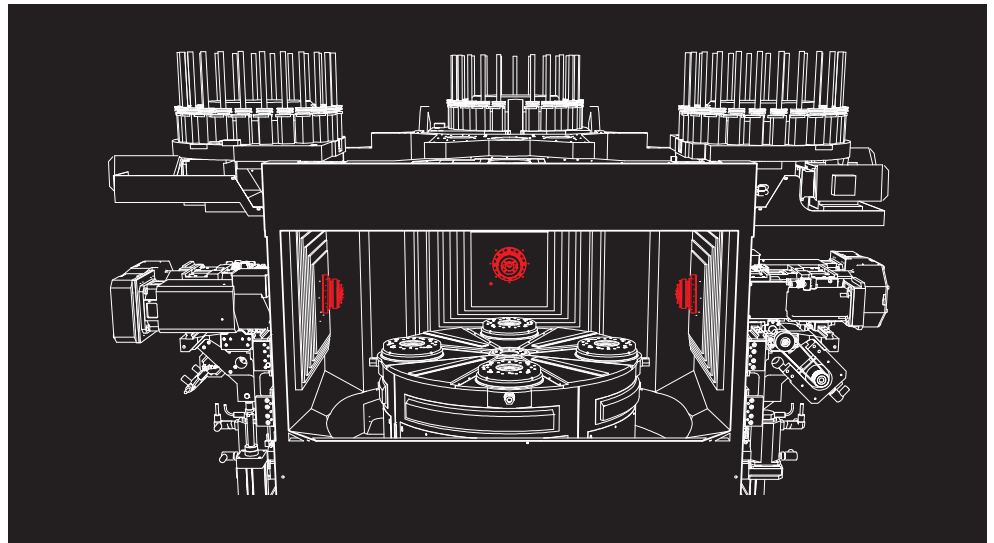
To maximize operational flexibility, the PORTACENTER exploits the tool change concept typical of machining centers, with three tool magazines in which to place 12, 24 or 40 tools each. Loading redundant tools allows you to extend production activity. In order to minimize setup times, it is possible to load different tools, reducing the need for operator intervention between one lot and the other. So, the production changeover will require just the replacement of clamping systems, as with machining centers.

In this regard, another advantage over the transfer is the possibility of using standard tools, rather than special ones, which often take weeks to supply and have a cost that is justified only for very large batches. This does not mean that the PORTACENTER cannot benefit from special tools: depending on the lots, their repeatability and the piece cost, it is possible to choose the best approach according to your specific need.

Optimized processes. Compared to a traditional machine, which often has multi-piece clamping equipment, on a machine tool with 3 independent spindles the piece is positioned close to the table, without excessive overhang.

Still talking about clamping equipment, with this solution tools are designed for the process and not for the machine: this means that it is not necessary to take into account from time to time where the piece is clamped, because they will always be accessible in the same way. Whilst on a multi-piece equipment it will be necessary to take into account the presence of the other pieces (raw and finished), additional equipment and related dimensions.

This allows to use shorter tools without extensions or other devices that trigger further vibrations or reduce the material removal capacity of the machine. A machine such as the PORTACENTER, on the other hand, allows to exploit at 100% your torque and power, thus reducing



the cycle time and enhancing modern tools or, alternatively, to maintain a more conservative machining cycle and extend the useful life of tools or achieve finer finishing. For motors, drives and numerical controls, the choice is between Siemens and Fanuc.

The machine is designed for the assembly of optical scales, which can also be installed at a later time, thanks to the predisposition of the modules with special holes for positioning and for cables.

The restyling of the fiberglass hull allows access to four specific points (three behind the operating units and one under the main panel), with a simple system for moving the panels managed by electromagnets, without using screwdrivers or keys, thus eliminating disassembly times.

This structural simplification also affects the assembly operations of the machine which have decreased over the

years, thus using less personnel and less time.

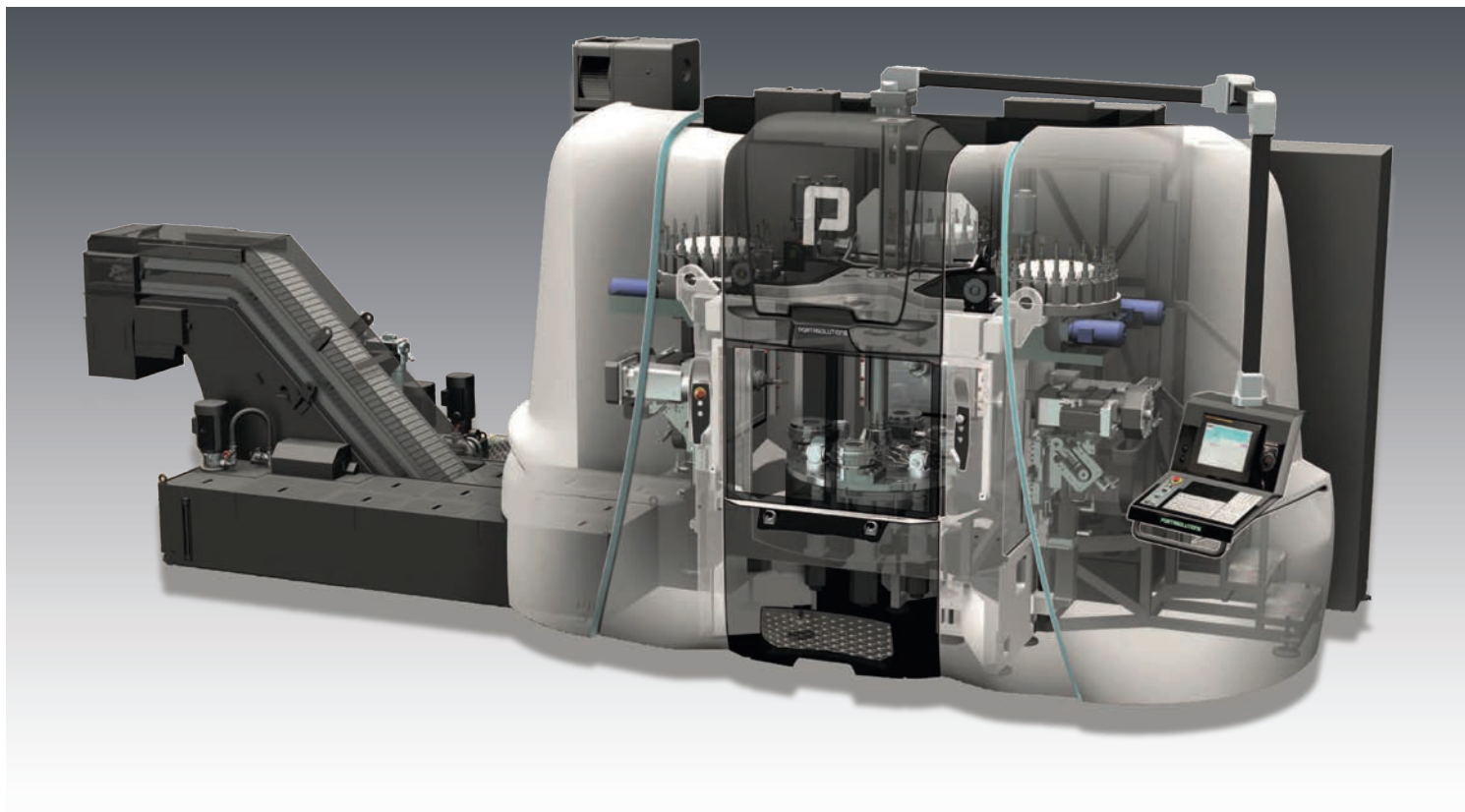
Everything is connected. In recent years there has been a significant proliferation of sensed solutions. Not a trend, but an opportunity to recover productivity and reliability in machines. And the PORTACENTER is no exception. Vibrations, temperatures, operation of single devices: everything is connected to the numerical control which, in turn, signals - locally or remotely - any need for intervention.

To make the most of all this information, a clear, complete interface is essential for the operator to independently solve as many interventions as possible. For this reason, all information and alarms appear on the CNC screen. The object of the problem is shown in 3D and for each sensor (levels, motors, pumps ...) there is a traffic light that indicates its status. This allows the operator to perform a first intervention simply based on the indications that the CNC shows.

Each area has its own graphics and intuitive guide; it is also possible to check the correct functioning of some devices by entering the relevant input / output page and visually see if pressing the button corresponds to a change of status. Nothing that an electrician cannot do with a tester, but doing so avoids having to physically intervene on the machine to access the part to be tested.

PORTACENTER 250

CUBE 250mm/10" ISO 40



TOOL CHANGE

	Metric	Imperial
tools	from 36 to 120	from 36 to 120
max tool weight	8 kg	17,63 lbs
max tool length	250 mm	9,84 in
max tool diameter	80 mm	3,15 in
max tool diameter with free position	120 mm	4,72 in
tool change	1,4 sec	1,4 sec
tool holder	option HSK63	option HSK63

CONTROL

human machine interface	touch-screen with full keyboard
teleservice	included
programming language	ISO code
CNC	Fanuc / Siemens

AXES X,Y and Z

	Metric	Imperial
axes stroke	250/310/200 mm	9,84/12,2/7,88 in
speed	30/30/30 m/min	98,4/98,4/98,4 ft/min
acceleration	6,5/5,5/6,5 m/s ²	21,3/18,1/21,3 ft/s ²
4th axis	continuous	
positioning system	encoder / digital scale	

TOOL HOLDER SPINDLES

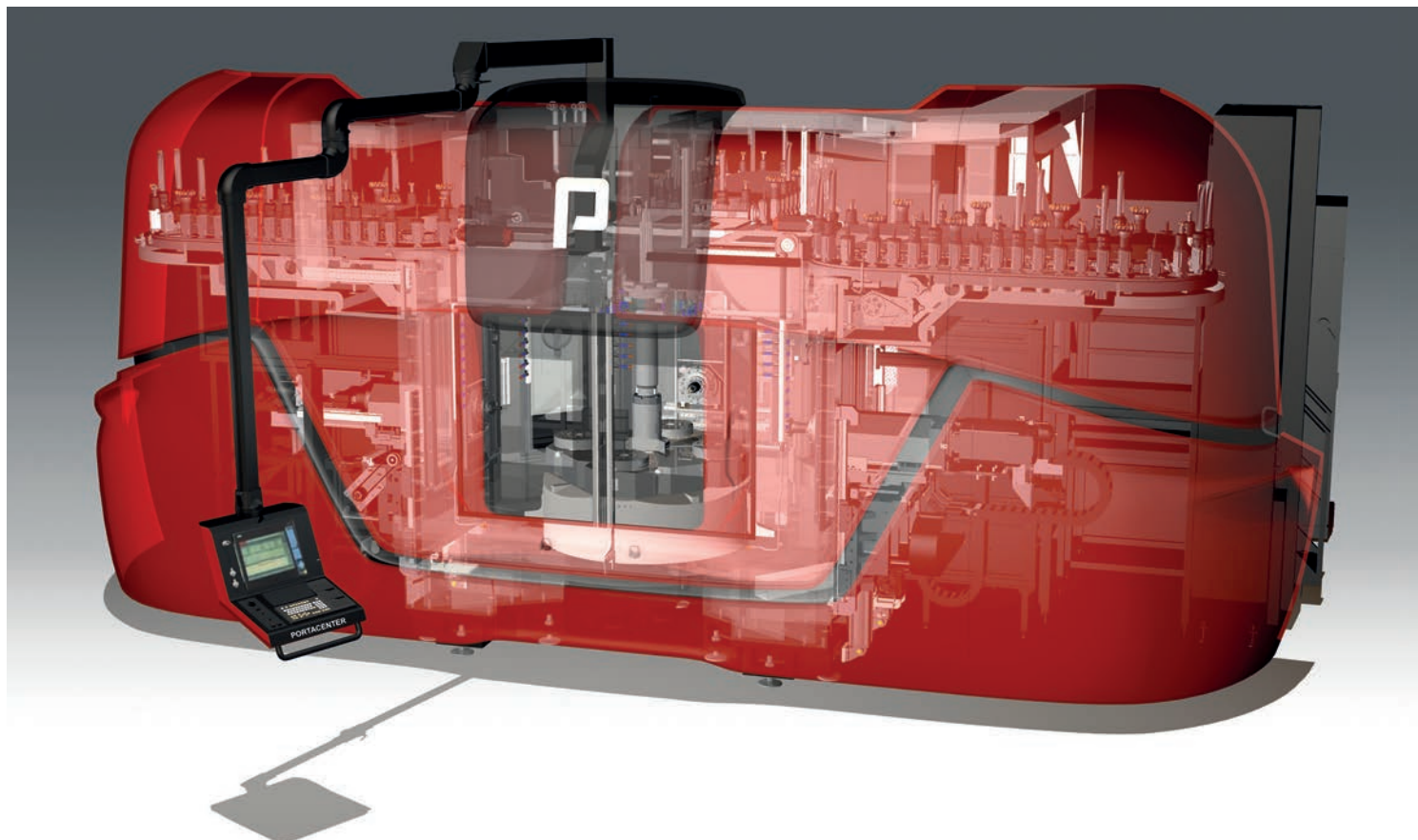
tool holder	ISO40 / HSK63
spindle speed	6000 / 13000 rpm
max power	up to 25 kw
max torque	150 Nm

SECTORS

Automotive	Fittings
Fluid Handling	Military
Oil & Gas	Transportation
Aviation	Fasteners

PORTACENTER 500

CUBE 500mm/20" ISO 50



TOOL CHANGE	Metric	Imperial
tools	from 36 to 120	from 36 to 120
max tool weight	20 kg	44,1 lbs
max tool length	400 mm	15,75 in
max tool diameter	125 mm	4,92 in
max tool diameter with free position	200 mm	7,87 in
tool change	3 sec	3 sec
tool holder	option HSK100	option HSK100

CONTROL

human machine interface	touch-screen with full keyboard
teleservice	included
programming language	ISO code
CNC	Fanuc / Siemens

AXES X,Y and Z	Metric	Imperial
axes stroke	500/500/500 mm	19,7/19,7/19,7 in
speed	30/30/30 m/min	98,4/98,4/98,4 ft/min
acceleration	4,5/3,5/4,5 m/s ²	14,8/11,5/14,8 ft/s ²
4th axis	continuous or 1° increment	
positioning system	encoder / digital scale	

TOOL HOLDER SPINDLES

tool holder	ISO50 / HSK100
spindle speed	4000 / 10000 rpm
max power	up to 50 kw
max torque	300 Nm

SECTORS

Automotive	Fittings
Fluid Handling	Military
Oil & Gas	Transportation
Aviation	Fasteners

ONE TECHNOLOGY. TWO MODELS.



Born in 2005, the PORTACENTER is the first machine tool with 3 independent spindles, built in series, 3 times more productive than a machining center and more flexible than a transfer (piece change in less than 15 minutes).

To keep up to date and meet the changing market demand, we have declined the PORTACENTER in two models:

- the first model, PORTACENTER 250 ISO40 / HSK63, with a 250mm working cube;
- the second model, PORTACENTER 500 ISO50 / HSK100, designed for more complex and larger pieces, within a 500mm working cube.

If the PORTACENTER 250 is placed between machining centers in battery and transfer machines, the PORTACENTER 500 does not have a real competitor on wider batches: there are no transfers (in the strict sense of the term) capable of fitting pieces of this size and with similar powers.

In fact, due to its features, the PORTACENTER 500 competes with machines with HSK 100 or ISO 50 tool coupling. Power, rigidity and removal capacity typical of this category of machines are required for these dimensions.



Three spindles match up with four. If with its three operating units the PORTACENTER 250 is capable of replacing approximately three machining centers of the same capacity in terms of productivity, the PORTACENTER 500 does not just replace three machines, but around four. How is it possible that three spindles replace one more? This is because in the ISO 50 range of machines downtime is higher due to the machine size (less dynamic) and to the tool and pallet change (slower). According to the type of piece, therefore, the ratio between PORTACENTER 500 and ISO 50 machining centers is approximately 1 to 4.5 machines.



Are you tired of losing orders and do you want to understand how to attack,
reducing as waste as the piece cost?

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

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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!!!

To your results,

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