Inventhor

vertical turning centres

By machinists for machinists.

IRIDIUM 100

created for your operational requirements

Daily improvement. Fast and reliable production. Dependable delivery. Flexible action to remain competitive. Inventhor is there to help you stay successful.

Feasibility, effectiveness, profitability
Our motivation is straightforward: It is our task to develop machines which are consistently adapted to your daily production requirements. Talk of efficiency mainly means time and money: minimising investment, optimising production time and costs. To achieve this, we can supply you with reliable and thought-out technical solutions.

A strategy based on experience and curiosity
When conventional machine constructions offer no improvement, we are prepared to leave beaten tracks. The origins of considerable improvements in profitability do not lie in detail but are virtually always found in the conceptual design. It is essential to combine fresh concepts and intelligent design with tested and proven technology. At the same time we also reduce function and complexity to their essentials. Our own many years of experience in production have given us the courage to repeatedly question conventions.

The result
We present the 4 axis vertical turning centre Inventhor Iridium 100, which is based on our innovative sliding-carriage technology. With this efficient specialist machine for short-cycle chuck parts, you will experience lathe-turning all new.

impressively north german

a friendly TURN

Inventhor sells innovative machines, designed and built in North Germany. The Inventhor Iridium is the result of consistent further technical development. But is it enough to meet your requirements?

You expect a reliable system solution for your serial production tasks! You want to fully exploit your cost reduction potential! This is why we see ourselves as a system supplier for fully-installed production processes.

Our experts will assist you in the calculation of part production times and part costs, technology introduction and production planning, with programming, commissioning and rationalisation. We include flexible automated work piece handling as well as measuring devices for automatic quality control.

We also ensure that the machine provides your production planning system with the data you need for transparent production control.

Our service department will then provide reliable capacity availability, so that the supplier becomes a partner.

save time,
increase order output

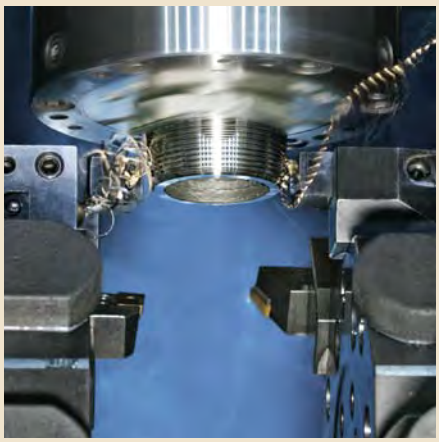
The machine concept of the Iridium 100 and the sliding-spindle technology enable a considerable increase in output in comparison with pick-up machines of a similar performance class. Why be satisfied with less?

Increasing of primary machining time
Shortening non-productive times is the aim of this system, travel is very short. Work piece changeover time in the working area is approx. 1.5 seconds. The idle time of the work spindles is reduced to a minimum. **You thus obtain more parts per shift.**

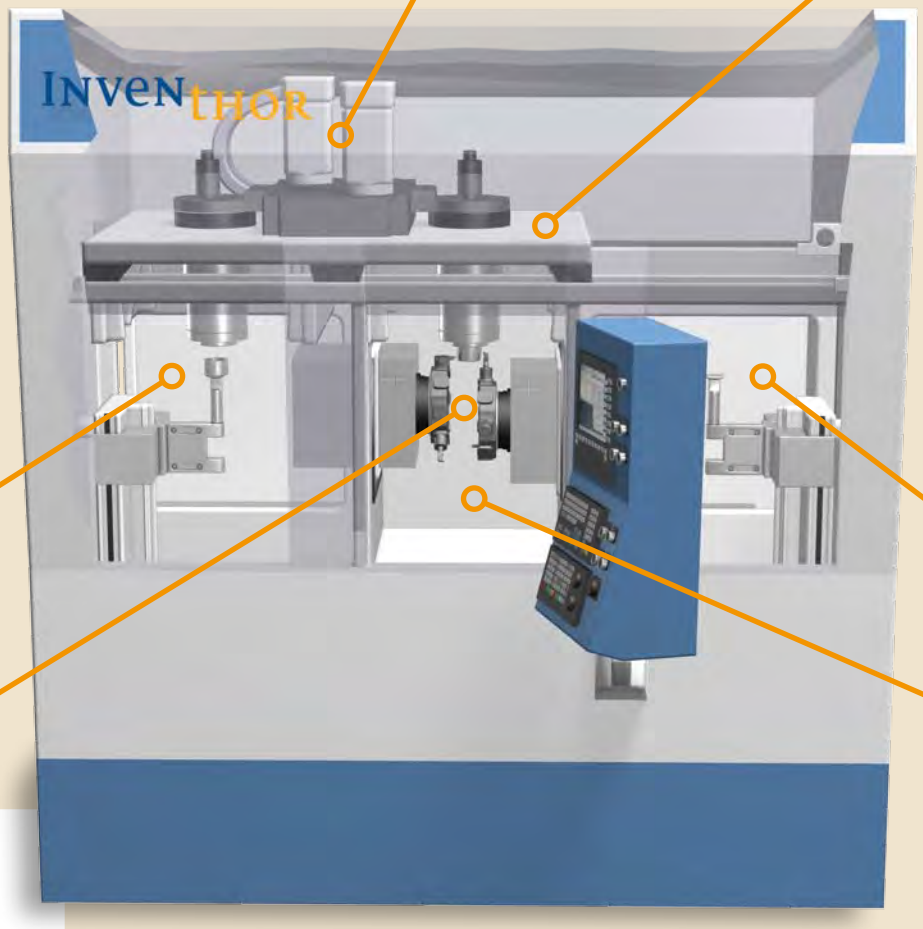
Shortening machining time
Thanks to the 4 axis machining section, you can reduce machining time by up to 40% with certain part sizes. **You need less time for each part.**

Minimisation of buffer time
With the Iridium 100, two-sided machining with different clamping fixtures is possible in one production phase. **The lead time is shortened.**

Built-in process optimisation
With classic twin spindle machines, the slower machining time determines the cycle time. Successive machining steps must first be optimised. The sliding carriage concept does not create this dependency, **you can achieve optimum machining in every clamping phase.**



the machine concept



Main spindle motors
12,5 kW

Sliding carriage
travel 910 mm,
rapid feed 65 m/min

Loading/ unloading area
for left spindle

Loading/ unloading area
for right spindle

Tool turret
2x8 VDI 30 tool fittings

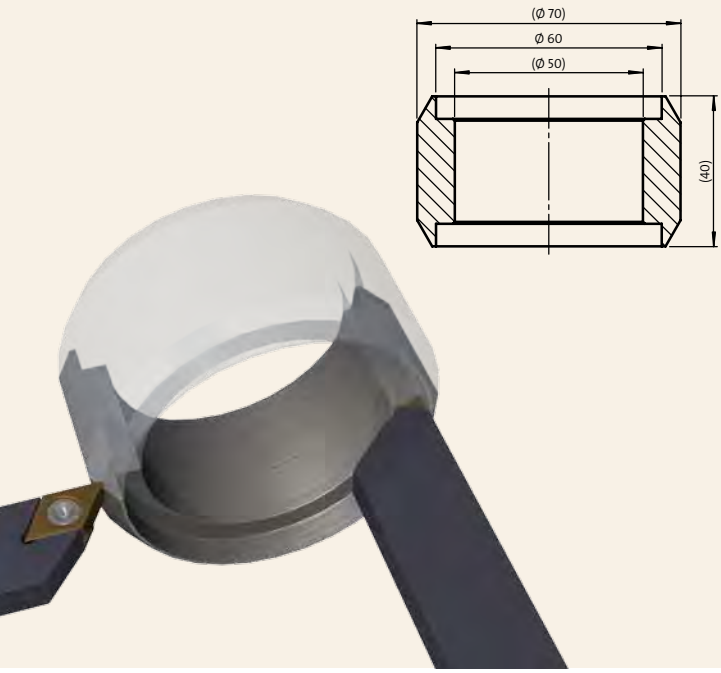
Working area

The Inventhor Iridium 100 is a vertical centre with two turning spindles which travel with the overhead sliding carriage. This configuration avoids the system-related disadvantages of pick-up machines and offers a higher power density.

The rigid and low-vibration concrete polymer machine frame is split into three areas. In the centre is the working area with two tool turrets. To the left and right, the loading and unloading areas contain the internal handling system for loading the spindle chucks parallel to primary machining. The power supply components and work piece transport system are fitted at the back of the machine.

NO COMPARISON

You machine pre-formed chuck parts for your customers in medium and large batch sizes. The Inventhor Iridium can prove its superiority here.



Case machining on Iridium 100

Unmachined part:
cold formed part in C15, outer and inner diameter fully machined

Sequential processing on one machine:
Two-sided identical machining of bevel and neck simultaneously using 4 axes

Cycle time per side:
4.2 seconds

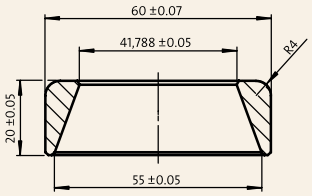
Total cycle time:
8.4 seconds

Machining on single-spindle pick-up machine

Cycle time per side:
10.5 seconds

Total cycle time:
21.0 seconds

Economy of time per part: 12.6 seconds, equivalent to 60 %



Bearing ring on Iridium 100

Unmachined part:
Forged piece in 100 Cr6 (1.3505), with an all-round stock of 2 mm

Subsequent processing on one machine:
1st clamping phase: track and jacket using 4 axes simultaneously
2nd clamping phase: Machining of face and chamfers

Cycle time:
1st clamping phase = 5.6 seconds
2nd clamping phase = 4.3 seconds

Total cycle time: 9.9 seconds

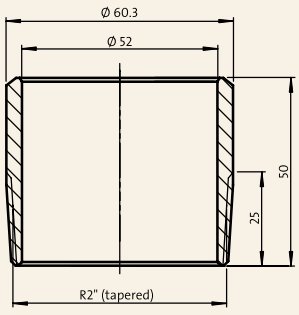
Machining on single-spindle pick-up machine

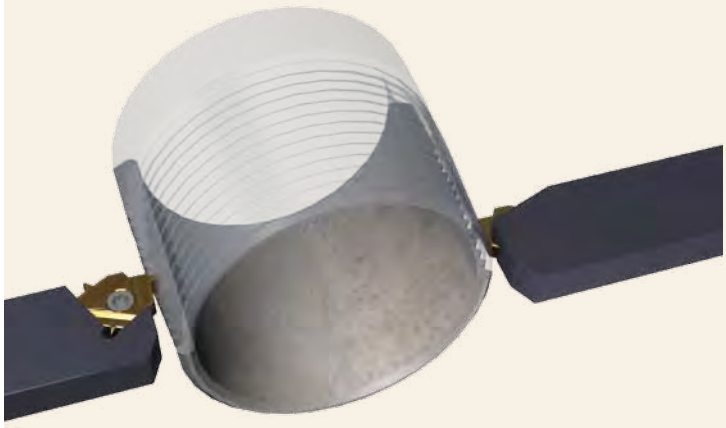
1st clamping phase
= 12.2 sec.
2nd clamping phase
= 9.8 sec.

Total cycle time:
22 seconds

Economy of time per part: 12.1 seconds, equivalent to 55 %

finished in seconds





Thread-fitting on Iridium 100

Unmachined part:
Structural steel S235-JR (1.0038),
pipe section burred

Subsequent processing on one machine:
1st clamping phase:
4 axes simultaneous external and internal grooving and thread cut
2nd clamping phase:
rear face and outer diameter

Cycle time:
1st clamping phase = 28.2 seconds
2nd clamping phase = 6.8 seconds

Total cycle time:
35.0 seconds

Machining on single-spindle pick-up machine

1st clamping phase = 59.4 sec.
2nd clamping phase = 14.8 sec.

Total cycle time: 74.2 seconds

Economy of time per part: 39.2 seconds, equivalent to **52,8 %**

perfect integration

Your production is naturally highly optimised. New additions must fit into the production sequence flexibly and with limited space requirements. Fast change-over times, user-friendliness and fastest possible trouble-shooting go without saying. A mere formality for us.

Flexible automation
The machine concept enables feeding and removal of work pieces tailored to your requirements in a flexible link with the existing production. The total space requirement is reduced to a minimum thanks to its compact design.

Two-sided machining is one of the Inventhor Iridium's particular assets. Turning and rechucking are decoupled from the cycle and take place outside the working space, buffer times are not required.

More transparency in production
MES systems (Manufacturing Execution Systems, e.g. JobDISPO from Fauser) for detailed production planning improve the transparency, productivity and resource management of your production.

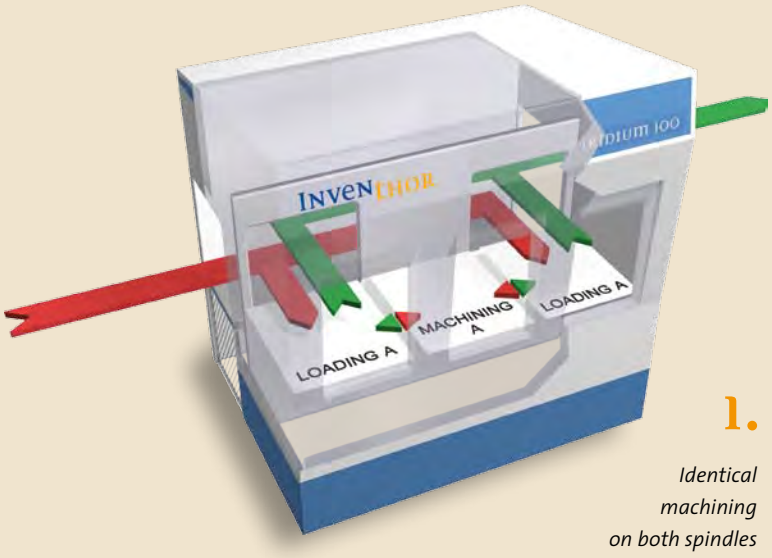
The machine software enables real time transmission of operating and machine data to your MES system, e.g. to be able to recall lead times or machine schedules from a central unit. This facilitates production control and planning. Status information becomes child's play.

Easy to use
The commonly used Siemens 840D forms the basis of the machine control system, extended by a customised user-interface for the Iridium 100. This supports graphical set-up and parameter input in order to avoid input errors and to save set-up times. The storage and recall of programmes is carried out via network or a USB data carrier.

In the event of an error, the error message is simply cancelled after remedial action, so that production can start-up again as quickly possible.

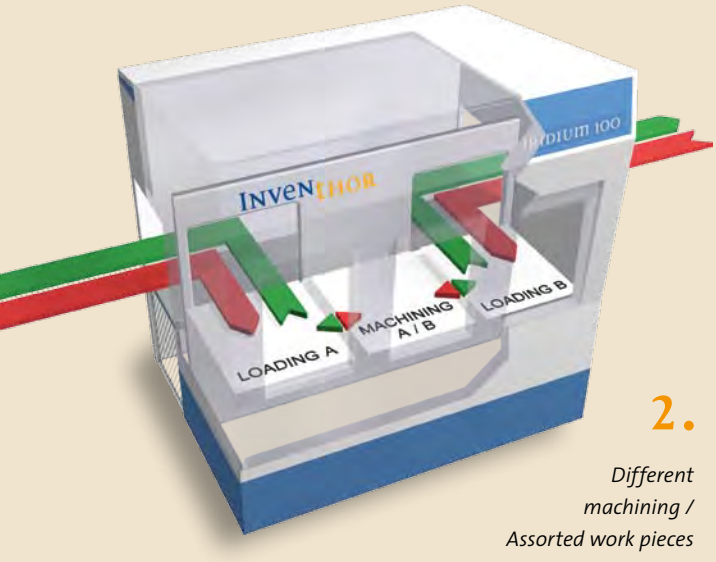
[1] *Manufacturing Execution Systems, e.g. JobDISPO from Fauser*

flexible adaptation



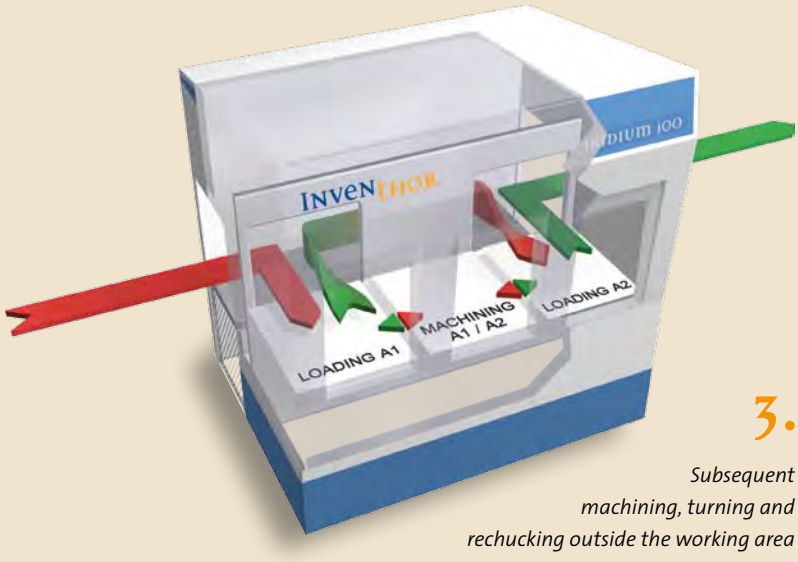
1.
Identical machining on both spindles

fast Reaction



2.

Different machining / Assorted work pieces



3.

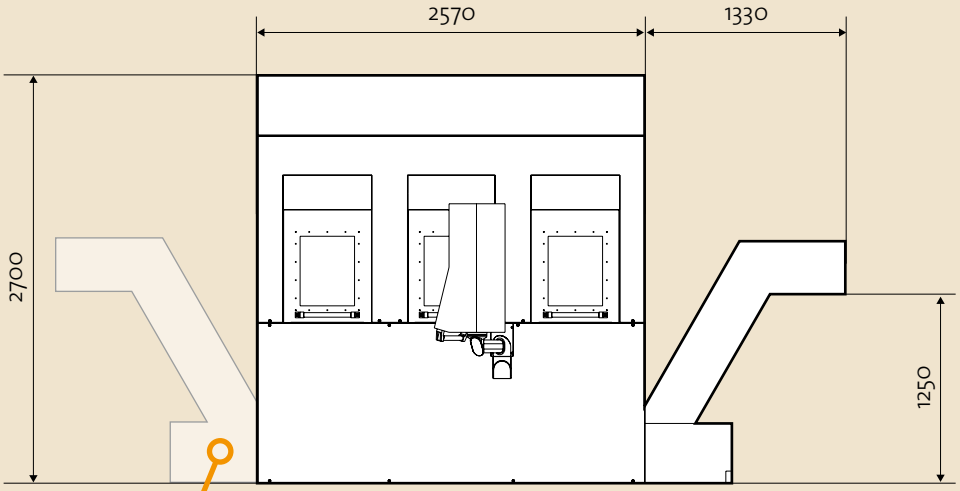
Subsequent machining, turning and rechucking outside the working area

technical data

Work area			
Max. chuck diameter		mm	Ø 160
Swing diameter with automation		mm	Ø 100
Swing diameter with manual loading, depending on work piece and machining		mm	Ø 160
Travel X / Z		mm	150 / 200
Change of Work piece in working area		sec.	≈ 1.5
Main spindles			
Number			2
Spindle flange according to DIN 55 026			A6
Spindle bearing, front		mm	Ø 140
Rotational speed		U/min	0–3000 with transmission ratio 1:3 of intermediate gearbox
			0–4500 with transmission ratio 1:2 of intermediate gearbox
			optional up to 6000
Main drives			
AC asynchronous motor 25% / 100% duty cycle		kW	17.5 / 12.5
Maximum power consumption		kW	17.5
Full output w/ spindle speed 25% / 100% duty cycle		U/min	1000 / 1000
Torque 25% / 100% duty cycle		Nm	200 / 102
Feed drives			
X, rapid feed		m/min	30
Z, rapid feed		m/min	30
U, rapid feed		m/min	65
Feed force in X, Z		kN	5
Ball screw spindles in X, Z and U		mm	Ø 32, 40 and 50
Disc turret			
Cylinder housing DIN 69 880			2 x 8x
Shank diameter			VDI 30
Electrical equipment			
Operating voltage		V	400
Control voltage	DC	V	24
	AC	V	230
	Frequency	Hz	50
Connected load		KW	48
In-line fuse		A	80
Type of electrical equipment			VDE 0113
Dimensions and weights			
Width / width with chip conveyor		mm	2570 / 3900
Depth / Depth with terminal / Depth required		mm	2000 / 2700 / 3600
Height		mm	2700
Weight		kg	approx. 8000

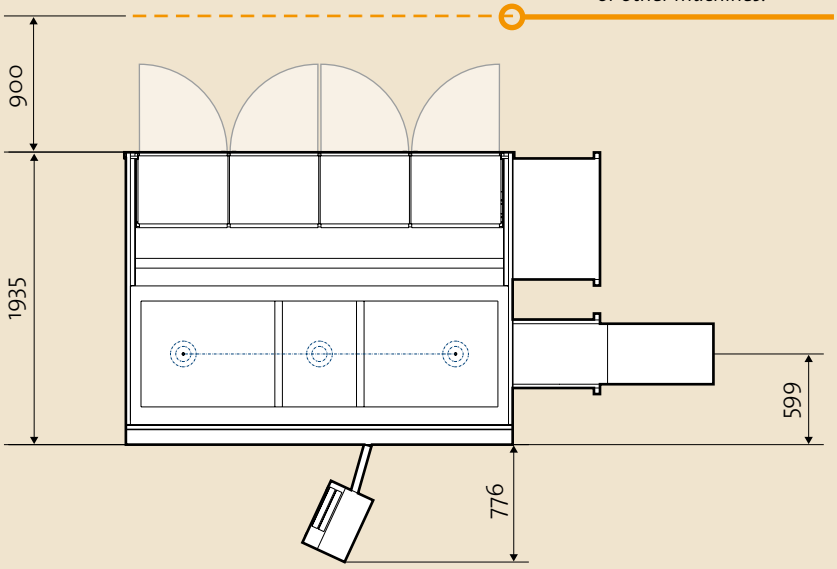
Subject to modification.

IRIDIUM 100



Chip conveyor can be fitted optionally either on the left or right.

Minimum distance to wall or other machines.



INVENTHOR

- **Design and development of vertical turning centres**
  - 4 axis vertical turning centres Iridium
  - 2 axis vertical turning centres Osmium
- **Development and implementation of customized automation solutions**
- **System supplier for serial production of lathe-turned parts**
- **Purpose-built machine components**
- **Universal diameter measurement devices**

Would you like more information about our products? Come and see us, we would be happy to arrange an appointment, or we can calculate a sample part for you.

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By machinists for machinists.

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