

# 5-AXIS MACHINING CENTERS

For high speed horizontal machining

**bavius**



[www.bavius-technologie.com](http://www.bavius-technologie.com)

# bavius technologie

## MACHINED STRUCTURE TECHNOLOGIES

bavius is one of the world's leading manufacturers of high speed 5-axis machining centers, covering a wide variety of applications.

Automation solutions and a comprehensive range of service offerings are an integral accomplishment of our product portfolio. Built on our extensive experience and with a broad range of turnkey solutions implemented, our customers benefit from proven innovations such as tool selection, fixtures, programming, part and machine setups as well as machine optimization.

The global bavius team works seamlessly together, along with sales and service partners worldwide to provide experience, productivity and innovation to our customers. A strong and reliable cooperation with customers and suppliers is based on trust and partnership, building the foundation of our performance.

Our innovative solutions provide you the latest, highly flexible, most reliable and safest processes to manufacture high quality components.

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SPEED

PRODUCTIVITY

RELIABILITY

INNOVATION

PRECISION

# 5-axis horizontal technology



## INNOVATIVE MACHINE MODELS OFFER OUTSTANDING PRODUCTIVITY ON SMALL FOOTPRINTS.

**bavius technologie** has combined the advantages of 5-axis horizontal machining in one product line.

Horizontal machining allows optimum cutting conditions: The workpiece is free from chips and coolant during machining. This is particularly important for improved productivity and surface quality when machining deep pockets at high chip removal rates.

### Highlights:

- 5-axis horizontal machining of aluminum parts
- Significantly reduced cycle times
- High chip removal rates due to high performance spindles, up to 140 kW and 30 000 rpm (S1)
- Optimum ergonomics and accessibility to the workpiece due to horizontal pallet position for loading/unloading
- Reduced cost per piece



**AeroCell 200 | AeroCell 250**  
The high speed machining center for workpieces up to 10 m in length.



**AeroCell 160**  
The high speed machining center for workpieces up to 4 m in length.



**CompactCell 100**  
The high performance compact machining center for workpieces up to 6 m in length.



## INTEGRATED DUAL PALLET CHANGING SYSTEM AS STANDARD > SMALL FOOTPRINT > HIGH PRODUCTIVITY

A specific feature of the HBZ AeroCell is the integrated pallet changing system with two pallets, a standard concept for this machine. In addition, customer-specific automated solutions can be realized to further increase productivity.

This innovative pallet changing system provides set-up of workpieces parallel to production and requires less floor space.

While machining on the first pallet, raw material is loaded on the second pallet which will be connected back-to-back with the first pallet. Both these pallets are then swiveled to fix the second pallet into the machine and start the milling process. First pallet is moved into the horizontal floor position ready to be unloaded. This ensures minimum idle time.

### Advantages

- Loading and unloading parallel to production
- Minimized idle time
- Reduced floor space requirements

### Automated solutions

- Integrated dual pallet changing system as standard
- Pallet rack and RGV for multiple pallets
- Linking of several machines and processes



# HBZ<sup>®</sup> AeroCell<sup>®</sup> 200

# HBZ<sup>®</sup> AeroCell<sup>®</sup> 250



## MAXIMUM PRODUCTIVITY FOR WORKPIECES OF ALUMINUM UP TO 10 M LENGTH.

### Aerospace customers worldwide set new standards with the HBZ AeroCell 5-axis horizontal machining center.

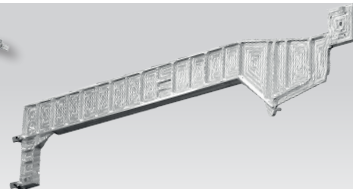
The area of expertise of the HBZ AeroCell are aluminum structural parts for the aerospace industry from 4 to 10 m in length and 2,5 m in width. Travel speeds of 80 m/min and accelerations of 7 m/s<sup>2</sup> allow highest material removal rates, short cycle times and reduced cost per part. The combination of a high performance spindle (140 kW and 30 000 rpm), high axis acceleration and travel speed as well as the horizontal machine concept allow a maximum material removal rate of 20 l/min.

### Highlights

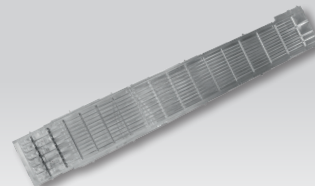
- Highly dynamic horizontal machining of workpieces up to 10 000 mm in length and 2 500 mm in width
- Impressive material removal rates
- Short cycle times
- Significant reduction of machining time as a result of highest axis travel speeds and accelerations
- Optimum ergonomics and access for loading/unloading the work piece
- Small footprint
- No special foundation needed, flat floor installation
- Siemens SINUMERK ONE control unit



Frame (aluminum)



Floor beam (aluminum)



Wing panel (aluminum)



Wing rib (aluminum)

# HBZ<sup>®</sup> AeroCell<sup>®</sup> 200



## TECHNICAL DATA

Travel path in mm X/Y/Z-axis	Travel speed X/Y/Z-axis	Acceleration X/Y/Z-axis	Pallet length	Milling head bmh	
10 800   2 000   800 mm	80   80   80 m/min	7 m/s <sup>2</sup> , 0.7 G	4 000, 7 000, 10 000 mm	Rotation angle A-axis	+/- 120°
			Pallet width	Rotation angle C-axis	+/- 360°
			2 000 mm	Rotation speed	360°/sec
Milling spindle		Tool interface	Tool magazine	Control unit	
Power S1	140 kW	HSK-A63, HSK-A63/80 HSK-A100	up to 120 slots	SIEMENS SINUMERIK ONE	
Spindle speed	30 000 rpm				
Torque S1	85 Nm				



# HBZ<sup>®</sup> AeroCell<sup>®</sup> 250



## TECHNICAL DATA

Travel path in mm X/Y/Z-axis	Travel speed X/Y/Z-axis	Acceleration X/Y/Z-axis	Pallet length	Milling head bmh	
8 800   2 500   800 mm	80   80   80 m/min	6 m/s <sup>2</sup> , 0.6 G	5 000, 8 000 mm	Rotation angle A-axis	+/- 120°
			2 500 mm	Rotation angle C-axis	+/- 360°
				Rotation speed	360°/sec
Milling spindle		Tool interface	Tool magazine	Control unit	
Power S1	140 kW	HSK-A63, HSK-A63/80 HSK-A100	up to 120 slots	SIEMENS SINUMERIK ONE	
Spindle speed	30 000 rpm				
Torque S1	85 Nm				



# HBZ<sup>®</sup> AeroCell<sup>®</sup> 160



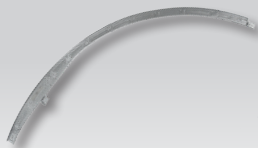
THE AIM OF DEVELOPING THE AEROCELL 160 WAS TO CREATE THE BEST PRODUCT IN ITS CLASS.

The AeroCell<sup>®</sup> 160 builds on 20 years of horizontal machining experience. It represents the state of the art in large-scale aluminum part production.

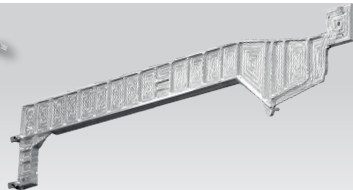
With the AeroCell<sup>®</sup> 160, bavius expands its HBZ<sup>®</sup> line of 5-axis horizontal machining centers. Designed for aluminum parts up to 1 600 x 4 000 mm, it combines high power and flexibility in a compact footprint. Key features include a 103-tool changer with chip-to-chip time under 10 seconds and support for HSK-A63/80 to HSK-A100. The dual pallet changer switches workpieces in under a minute. With 140 kW spindle power, high dynamics, and rigidity, the AeroCell<sup>®</sup> 160 delivers top performance and represents state-of-the-art machining.

## Highlights

- Highly dynamic horizontal machining of aluminum workpieces up to 1 600 x 4 000 mm
- Impressive material removal rates
- Short cycle times due to the dual pallet changer
- Significant reduction of machining time as a result of highest axis travel speeds and accelerations
- Operator- and maintenance-friendly
- Improved ergonomics and access for loading and unloading the workpieces
- Good accessibility in setup position from all sides of the pallet
- Small footprint
- No special foundation needed, flat floor installation
- Siemens SINUMERIK ONE control unit



Frame (aluminum)



Floor beam (aluminum)



Bulkhead (aluminum)



Wing rib (aluminum)

# HBZ® AeroCell® 160



## TECHNICAL DATA

Travel path in mm X/Y/Z-axis	Travel speed X/Y/Z-axis	Acceleration X/Y/Z-axis	Pallet length	Milling head bmh	
4 400   1 700   850 mm	70   70   70 m/min	7 m/s², 0.7 G	4 000 mm	Rotation angle A-axis	+/- 120°
			Pallet width	Rotation angle C-axis	+/- 275°
			1 600 mm	Rotation speed	360°/sec
Milling spindle		Tool interface	Tool magazine	Control unit	
Power S1	140 kW	HSK-A63/80 HSK-A100	103 slots 240 slots as option	SIEMENS SINUMERIK ONE	
Spindle speed	30 000 rpm				
Torque S1	85 Nm				



# HBZ<sup>®</sup> CompactCell 100



## THE HBZ COMPACTCELL IS THE IDEAL ENTRY INTO 5-AXIS HORIZONTAL MACHINING.

The HBZ CompactCell reflects bavus expertise in horizontal 5-axis machining and is designed for high-speed aluminum cutting in compact environments.

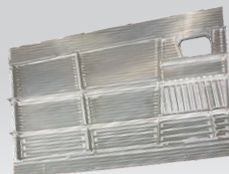
As a proven part of the HBZ<sup>®</sup> series, the CompactCell offers a horizontal high-performance spindle for excellent cutting values and full 5-axis simultaneous machining - ideal for aluminum structural parts. Three available pallet sizes provide application flexibility, while the compact design requires no special foundation. A pallet changer with swivel and shift functions enables loading and unloading during machining. These features make the HBZ<sup>®</sup> CompactCell a powerful, compact, and highly efficient solution for modern aluminum machining.

### Highlights

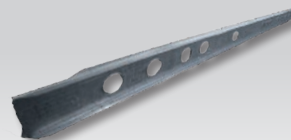
- Horizontal machining of aluminum workpieces up to 1 000 x 6 000 mm
- 5-sided machining in one clamping
- High machine dynamics and acceleration for highly accurate machining
- Less floor space requirement due to a compact machine design
- High axis travel speeds
- Optimum ergonomics and accessibility to the workpiece due to horizontal pallet position for loading/unloading
- Installation at ground level, without special and extensive foundation work



Intercoastal doot (aluminum)



Wing skin section (aluminum)



Cross floor beam (aluminum)



Rib (aluminum)

# HBZ<sup>®</sup> CompactCell 100

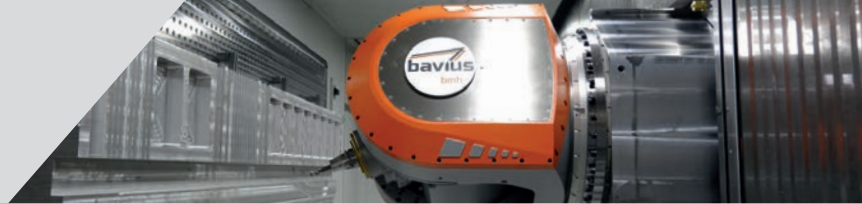


## TECHNICAL DATA

Travel path in mm X/Y/Z-axis	Travel speed X/Y/Z-axis	Acceleration X/Y/Z-axis	Pallet length	Milling head bmh	
6 650   1 100   550 mm	60   40   60 m/min	5 m/s <sup>2</sup> , 0.5 G	2 000, 4 000, 6 000 mm	Rotation angle A-axis	+/- 120°
				Rotation angle C-axis	+/- 200°
				Rotation speed	360°/sec
Milling spindle		Tool interface	Pallet width	Tool magazine	
Power S1	80 kW	HSK-A63	1 000 mm	50 slots (Disc type) 2nd tool magazine optional	
Spindle speed	30 000 rpm				
Torque S1	36 Nm (S1)				



# bavius milling head bmh



## THE HEART OF OUR PERFORMANCE

### ADVANTAGES

#### PERFORMANCE

A whole series of bavius milling heads „bmh“

#### DYNAMICS

Significant increase in cutting performance

#### VERSATILITY

Heads for various spindle combinations

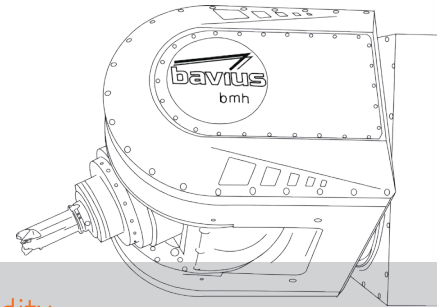
#### PRODUCTION

5-axis milling key component, manufactured inhouse

#### CONTINUITY

Retrofitting capability

The bmh milling heads are specially designed for bavius machining centers and are exclusively developed and manufactured by bavius. The synergy between bavius machining centers and the bavius milling head is unique: The bmh ensures highly dynamic 5-axis machining combined with outstanding process reliability. Our milling head/spindle combination provides high cutting performance with excellent accuracy and surface qualities, even with extra-long tools or large angle heads.



More power

Maximum rigidity

Maximum damping

**bavius** milling head

Higher dynamics

# HBZ<sup>®</sup> machine models at a glance



	AeroCell 200	AeroCell 250	AeroCell 160	CompactCell 100
<b>Pallet size max.</b>	L: 4 000   7 000   10 000 mm W: 2 000 mm	L: 5 000   8 000 mm W: 2 500 mm	L: 4 000 mm W: 1 600 mm	L: 2 000   4 000   6 000 mm W: 1 000 mm
<b>Workpiece size L x W max.</b>	10 000 x 2 000 mm	8 000 x 2 500 mm	4 000 x 1 600 mm	6 000 x 1 000 mm
<b>Travel path X/Y/Z-axis max.</b>	10 800   2 000   800 mm	8 800   2 500   800 mm	4 400   1 700   850 mm	6 650   1 100   550 mm
<b>Travel speed X/Y/Z-axis</b>	80   80   80 m/min	80   80   80 m/min	70   70   70 m/min	60   40   60 m/min
<b>Rotation angle A-axis</b>	+/- 120°	+/- 120°	+/- 120°	+/- 120°
<b>Rotation angle C-axis</b>	+/- 360°	+/- 360°	+/- 275°	+/- 200°
<b>Rotation speed</b>	360°/sec	360°/sec	360°/sec	360°/sec
<b>Spindle data:</b>				
<b>Power S1</b>	140 kW	140 kW	140 kW	80 kW
<b>Spindle speed</b>	up to 30 000 rpm	up to 30 000 rpm	up to 30 000 rpm	30 000 rpm
<b>Torque S1</b>	up to 85 Nm	up to 85 Nm	up to 85 Nm	36 Nm
<b>Tool interface</b>	HSK-A63, HSK-A63/80, HSK-A100	HSK-A63, HSK-A63/80, HSK-A100	HSK-A63/80, HSK-A100	HSK-A63
<b>Acceleration max.</b>	7 m/s <sup>2</sup> , 0.7 g	6 m/s <sup>2</sup> , 0.6 g	7 m/s <sup>2</sup> , 0.7 g	5 m/s <sup>2</sup> , 0.5 g
<b>Tool magazine</b>	120 slots (Chain type)	120 slots (Chain type)	103 slots (Chain type) option 240 Slots (Chain type)	50 slots (Disc type) option 2nd tool magazine up to 3.5 t
<b>Pallet load max.</b>	up to 8 t	up to 8 t	up to 3 t	up to 3.5 t
<b>Total weight, approx.</b>	80 - 150 t	90 - 150 t	70 t	28 - 58 t
<b>Space requirement (L x W x H), approx.</b>	HBZ AeroCell 200   400: 16 000 x 10 000 x 4 000 mm  HBZ AeroCell 200   700: 19 000 x 10 000 x 4 000 mm  HBZ AeroCell 200   1000: 22 000 x 10 000 x 5 000 mm	HBZ AeroCell 250   500: 17 000 x 10 500 x 4 500 mm  HBZ AeroCell 250   800: 20 000 x 10 500 x 5 500 mm	HBZ AeroCell 160   400: 14 000 x 10 000 x 4 000 mm	HBZ CompactCell 100   200: 13 000 x 8 000 x 3 000 mm  HBZ CompactCell 100   400: 17 000 x 8 000 x 3 000  HBZ CompactCell 100   600: 22 000 x 8 000 x 3 000 mm

# bavius LinkUp®

## INTEGRATED AUTOMATION SOLUTION STANDARDIZED AND CUSTOMER SPECIFIC.

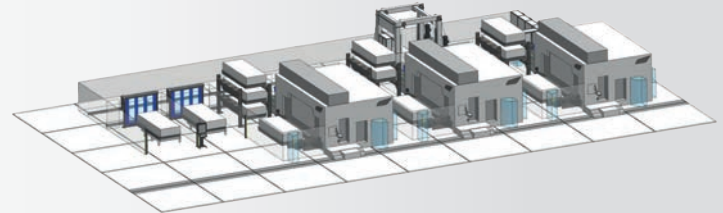
Automation is an integral part of our product portfolio. Building on many years of experience, we offer both standardized and customized automation solutions to meet a wide range of production requirements. The result: reduced non-productive times, shorter cycle times, and lower cost per piece.

### Connecting multiple machines with LinkUp

With LinkUp, we develop tailored automation concepts that connect several machines into one seamless production system. This intelligent networking reduces cycle times and machine downtimes while significantly lowering overall production costs.

### Your Advantages with bavius LinkUp

- Standardized and customized
- Loading and unloading in parallel with production
- Increase in productivity and reduction in part costs
- Unmanned operation
- Ensuring consistent processes and quality
- Modularly expandable
- Machine and automation from a single source





# bavius service

Your efficiency is our inspiration

## Individual. Mutual. Sustainable.



On-site support

bavius USA  
East Dundee, Chicago, IL



Digital support

bavius Germany  
Baiernfurt, Headquarters



Refurbishment



Preventive analysis

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