

# **Our sites - Europe**



## Guldsmedshyttan

Casting

Founded: 1868 Area: 442.384 qm2 Buildings: 22.000 qm2 Machines on site: N/A

Cast capacity per year: 30 Kton

Surface Treatment: N/A



### Lem

Machining > Surface Treatment > Assembly

Founded: 1987
Area: 112.466 qm2
Buildings: 15.942 qm2
Machines on site: 13
Cast capacity per year: N/A
Surface Treatment: Yes

# **Our sites - China**



### Tianjin

Machining > Surface Treatment > Assembly

Founded: 2008 Area: 45.000 qm2 Buildings: 30.500 qm2 Machines on site: 15 Cast capacity per year: N/A

Surface Treatment: Yes



# Xuzhou

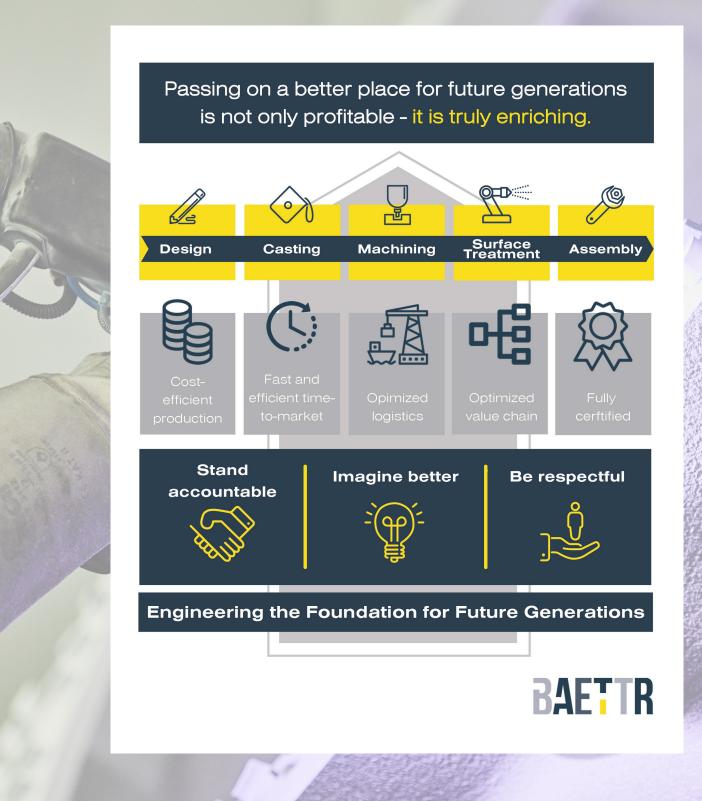
Casting

Founded: 2009 Area: 72.951 qm2 Buildings: 21.788 qm2 Machines on site: N/A

Cast capacity per year: 80 Kton

Surface Treatment: N/A

#### **Our Baettr Profile House**



#### **Our Way to Market**

The New Product Introduction process, in Baettr, is described in our unique stage gate model that has been certified from APQP4Wind®.



In accordance with APQP4Wind

This model is supported by checklists, detailed deliverables description, roles and responsibilities and gate audits. This supports a successful and uniform project execution and at the end happy customers. As an additional step we have achieved APQP4Wind certification of all of our sites.

#### Improved designs through Simulation:

When designing the optimal processes to manufacture the customer component, we are focusing on getting as many risks mitigated as soon as possible in the design phase.

For Casting Technology Design we always use lessons learned from previous projects and conduct review sessions in our design teams. And then we use Magmasoft® to simulate how the design behaves and optimize the design before starting to produce the first item. In Machining we use Vericut® simulation to optimize the tools and CNC program before putting the first item on the machine.

#### Quality testing:

When a component has been casted, Non Destructive Testing (NDT) and Destructive Testing (DT) is performed to evaluate the quality of the component according to customer requirements. In addition to that, Baettr has invested in a Phased Array Ultrasonic Test (PAUT) equipment to become even better in evaluating the casted material quality. After the machining of the component, we use a variety of advanced measurement equipment to document the quality of the process. At each of the machining sites we use Laser tracker and at two of the sites we also have 3D CMM machines. In addition to that we have 3D scanning equipment also available in two sites.

#### Assembly:

Sometimes delivering the components as single components, to the customer, is not the optimum solution for the finished assembly at our customer. In those cases, we are offering to perform assembly processes as well and deliver sub-assembled modules. This type of processes can be offered from 2 of our machining sites in EU and CN.



Located in southern Sweden is Baettr's foundry in Guldsmedshyttan.

Rich in both history and experience, Guldsmedshyttan pioneers innovation in casting technology for on-shore components, helping our customers achieve more cost-efficient manufacturing procedures.

Originally founded in the 15th century, the foundry in Guldsmedshyttan was a cornerstone to the Swedish royal family, manufacturing 95% of the army's artillery supplies and cannonballs. Purchased by Vestas in 1980, the foundry has seen massive investments in research and technology. Guldsmedshyttan was taken over by Baettr in 2014. Guldsmedshyttan serves as one of the oldest operating foundries in the world.

Guldsmedshyttan is a primary driver in providing fast and specification compliant casting for on-shore components, whilst developing new innovation in casting.



### Guldsmedsyttan

# Casting

Guldsmedshyttan is a primary driver in providing fast and specification compliant casting for on-shore components, whilst developing new innovation in casting. Guldsmedshytten handles the casting of components in the typical range of 15 to 20 tons\*.

A key focus of the Swedish facility is testing new casting processes, in order to up-scale and implement manufacturing operations across the rest of our facilities.

Guldmsedshyttan facility has full equipped In-house pattern maintenance shop.

Mould box size: Max. 5,000 x 6,000 x 4,000 \*\*

	Capacity (up to)	Lifting height (to the ground)	Dimensions		Number	
Area/Item	t or tph	mm	Length mm	Width mm	Height mm	Pcs
Mixers						
1	60	3.500				1
2	30	3.500				2
3	20	2.500				1
Furnaces						
1	25					2
2						
Ladle						
1	30	4.200				2
2	25	4.200				2
3	20	4.200				2
4	16	4.500				1
5						
Cranes						
Moulding	60	8.500				3
Assembly (Casting)	60 (60)	8.500				1
Shake out	60	7.000				1
Fettling	25	5.000				1
NDT	10	5.000				1
Pits						
Moulding pit			11.000	4.000	2.500	1
Casting pit			30.000	7.000	2.000	1
Casting pit			25.000	4.700	1.500	1
Gates						
Foundry				7.000	6.000	
Fettling and NDT				4.500	5.000	

<sup>\*</sup>components above 20 ton can be provided (contact us for clarification)

<sup>\*\*</sup>mould box size can vary according to component size







# Machining

Our Lem site has a big selection of strong machines to fit various item geometries and be able to machine both accurate and in an efficient way. In the site we have very skilled machine operators and we continuously have a high number of new apprentices in education. Several of our skilled operators, white collar engineers and specialists in machining have been apprentices in Baettr Lem.

Work Centers - Milling	BTL - 65701	BTL - 65702	BTL - 65703	BTL - 65704
Model	PAMA SpeedRam 2000	PAMA SpeedRam 2000	PAMA SR 2000 Tilt	PAMA SpeedRam 2000
Production Year	2002	2002	2002	2008
Serial Number	30C07353	30C07359	30C07364	30C07476
Axes				
X-axis	5.000 mm	5.000 mm	5.000 mm	5.000 mm
Y-axis	3930 mm	3930 mm	3942 mm (-	4001 mm
T-axis	(+240 - +4170)	(+240 - +4170)	352 - +3590)	(+189 - +4190)
Z-axis	1.000 mm	1.000 mm	1.000 mm	1.000 mm
W-axis	1.200 mm	1.200 mm	1.200 mm	1.200 mm
V-axis	2.500 mm	2.500 mm	1.500 mm	2.500 mm
B-axis	360.000°	360.000°	360.000°	360.000°
A-axis	N/A	N/A	+8° -8°	N/A
Turning table				
Plan	2.000 X 3.500 mm	2.000 X 3.500 mm	Ø 2.500 mm	2.000 X 2.500 mm
Max load	45.000 kg	45.000 kg	25.000 kg	40.000 kg
Maindrive/spindel				
Max effect S1-100%	76 KW	76 KW	72 KW	91 KW
Spindle speed	2.800 rpm.	2.800 rpm.	2.800 rpm.	3.000 rpm.
Attachments	TS35 144	TS35 144	N/A	TS35 144
Crane Capability	32 t	32 t	32 t	32 t
Access gate size	5980 mm x 5930 mm	5980 mm x 5930 mm	5980 mm x 5930 mm	5980 mm x 5930 mm

Work Centers - Milling	BTL - 65602	BTL - 65605
Model	G/L Euroborer tilt	PAMA SpeedMat
Production Year	2001	2010
Serial Number	450-1200	30C07212
Axes		
X-axis	3.050 mm	3.000 mm
Y-axis	2.500 mm	2807 mm (+120 - +2927)
Z-axis	1.220 mm	2.700 mm
W-axis	N/A	800 mm
V-axis	2.000 mm	N/A
B-axis	360.000°	360.000°
A-axis	+10° -3°	N/A
Turning table		
Plan	Ø 2.000 mm	1.600 X 2.000 mm
Max load	15.000 kg	12.000 kg
Maindrive/spindel		
Max effect S1-100%	60 KW	52 KW
Spindle speed	3.000 rpm.	3.500 rmp.
Attachments	N/A	D Andrea
Crane Capability	20 t	10 t
Access gate size	4820 mm x 4720 mm	4820 mm x 4720 mm

Work Centers - Milling	BTL - 65501	BTL - 65502	BTL - 65503	BTL - 65402	BTL - 65210	BTL - 65462	BTL - 65464
Model	G/L Euroborer	G/L Euroborer	PAMA SpeedRam 2000	PAMA SpeedMat	Mazak FH6800	Mazak vtc200b	Fil Fresatrici
Production Year	2000	2000	2001	2007	2001	2001	1996
Serial Number	450-1198	450-1199	30C07348	30C07747	154562	153367	M-259
Axes							
X-axis	4.850 mm	4.850 mm	5.000 mm	3.000 mm	1.050 mm	1.120 mm	1.300 mm
Y-axis	3.000 mm	3.000 mm	3204 mm	2086 mm	800 mm	510 mm	905 mm
Z-axis	1.220 mm	800 mm	(+207 - +3411) 800 mm	(+85 - +2171) 2.700 mm	880 mm	510 mm	800 mm
W-axis	N/A	N/A	900 mm	800 mm	N/A	N/A	N/A
V-axis	2.995 mm	2.995 mm	2.500 mm	N/A	N/A	N/A	N/A
B-axis	360.000°	360.000°	360.000°	360.000°	360.000°	N/A	N/A
A-axis	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Turning table							
Plan	1.600 X 3.500 mm	1.600 X 3.500 mm	2.000 X 3.500 mm	1.600 X 2.000 mm	630x630	1.450x510 mm	1.600x570 mm
Max load	22.500 kg	22.500 kg	45.000 kg	12.000 kg	1.500 kg	800 kg	1.500 kg
Maindrive/spindel							
Max effect S1-100%	60 KW	60 KW	60 KW	52 KW	63.4 KW	15 KW	20 KW
Spindle speed	3.000 rpm.	3.000 rpm.	2.500 rpm.	3.500 rmp.	7000 rpm.	10.000 rpm.	3.000 rpm
Attachments	N/A	N/A	N/A	D Andrea	N/A	N/A	N/A
Crane Capability	32 t	32 t	32 t	10 t	1,5 t	3,2 t	2,5 t
Access gate size	4820 mm x 4720 mm	4820 mm x 4720 mm	4820 mm x 4720 mm	4490 mm x 4490 mm	4800 mm x 4800 mm	2910 mm x 3690 mm	2910 mm x 3690 mm



### **Machining**

In-house services include shot blasting, metallization and painting, and an infrared paint drying facility. We comply with corrosion class up to C5, with throughput time down to as little as 24 hours. The capability in our Surface Treatment is dimensioned to match the capabilities in the Machining department.

- 1 manual sandblasting cabin.
- 1 automatic sandblasting robot.
- 1 metallization cabin: Capability for pure zink or zink / alu according customer requirement.
- 2 manual paint cabins.
- Gas catalytic IR drying cabin which gives a significantly faster cure than normal heat.

  Normal cure time for full cured is 7 days at 21 degrees C. With IR drying the curing time is 1½ hours.
- · Paint Kitchen with 2K pumps to ensure unidirectional and correct mixing of paint
- Full process control, inspection, and documentation of the entire painting process

Work Centers - Turning	BTL - 65403	BTL - 65301	BTL - 65504	BTL - 65302	BTL - 65463
Model	Okuma VTC Lathe	Tacchi HD3	Tacchi Lathe DB 122 HS	Mazak 50YB	Mazak 200M
Production Year	2008	2000	2012	2000	2000
Serial Number	12079	6895	7232	146127	149092
Axes					
X-axis	1270 mm	1200	1200	1.350 mm	350 mm
Y-axis	1000 mm	N/A	N/A	250 mm	N/A
Z-axis	1080 mm	4.000 mm	5.000 mm	1.500 mm	570 mm
C-axis					
Plan/Head stock	Ø1200	Ø1500	Ø2300	Ø720 mm	Ø250 mm
Max item weight	2500 kg.	25.000 kg.	35.000 kg.	1.500 kg	800 kg
Speed head stock	600 rpm.	450 rpm.	220 rpm.	2.000 rpm.	5.000 rpm.
Effect	22 KW	100 KW	100 KW	30 KW	19 KW
Spindel(rotating tools)					
Max effect S1-100%	15 KW	5 KW	22 KW	N/A	N/A
Spindle speed	4000 rpm.	1000 rpm.	1620 rpm.	3.000 rpm.	2.500 rpm.
Crane Capability	2 t	16 t	16 t	1,5 t	3,2 t
Access gate size	4490 mm x 4490 mm	4490 mm x 4490 mm	4820 mm x 4720 mm	4800 mm x 4800 mm	2910 mm x 3690 mm

Work Centers - Saw	BTL - 65601
Model	Durma DCB-S 1100
Produc tion Year	2013
Serial Number	N/A
Axes	
Max width	1300 mm
Max height	1100 mm
Crane Capability	20 t
Access gate size W x H	4820 mm x 4720 mm

Work Centers - Measuring	BTL - 65901
Model	зсмм
Production Year	1999
Serial Number	109785
Axes	
X-axis	1600 mm
Y-axis	2400 mm
Z-axis	1200 mm
Plane	1600 mm x 2400 mm
Max load	5 t
Crane Capability	3,2 t
Access gate size W x H	3000 mm x 3000 mm

Laser tracker and Measuring Arm BTL						
Measurements equipment	Laser Tracker BTL 4092	Laser Tracker BTL 4035	Measuring Arm BTL 7525-0568-FA			
Production year	2011	2011	2011			
Serial number	4092	4035	7525-0568-FA			
Model	LEICA Absolute Tracker AT901-B	LEICA Absolute Tracker AT901-B	Romer Absolute Arm 7525			
Measuring range	80m	Up to Radius 9000mm	2,5 m			
Accuracy (MPE)	0,015 + 0,006mm/m	0,015 + 0,006mm/m	±0,029			







# Casting

Lean-optimized manufacturing processes ensure cost-competitive use of resources. The site used three different production lines and produces components in the typical sizes of 3 to 25 tons\*.

Mould box size: Max. 5200 x 3900 x 2300\*

	Capacity (up to)	Lifting height (to the ground)	Dimen	sions		Number
Area/Item	t or tph	mm	Length mm	Width mm	Height mm	Pcs
Mixers						
1	60	4.300				4
2						
Furnaces	1					
1	12					4
2	6					2
Ladle						
1	25	9.800				5
2	13	9.800				4
3	6	9.800				3
4	14	9.800				1
5	30	9.800				1
Cranes						
Moulding	50	9.800				6
Assembly (Casting)	100	12.900				4
Shake out	50	9.800				1
Fettling	25	9.800				3
NDT	25	9.800				1
Pits						
Moulding pit						
Casting pit					N.A.	
Casting pit						
Gates						
Foundry				6.000	6.00	0
Fettling and NDT				6.000	6.00	0

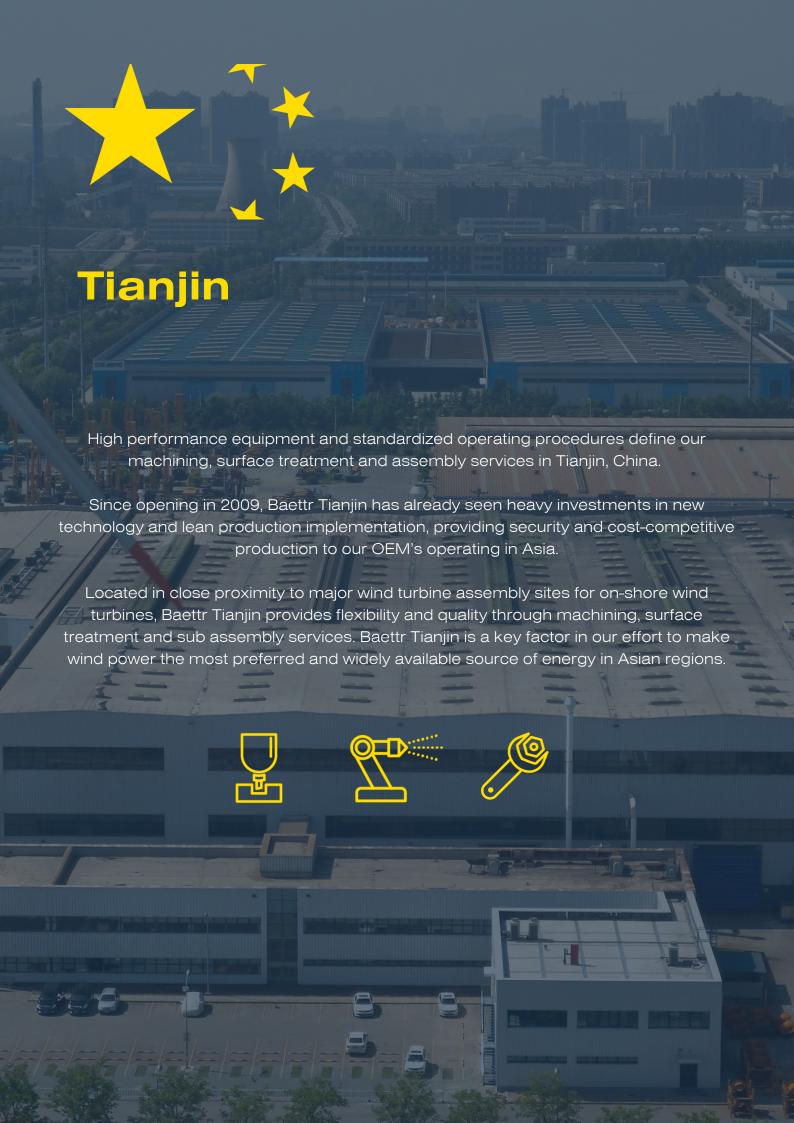
 $<sup>^{\</sup>star}\text{components}$  above 25 tons can be provided (contact us for clarification)

<sup>\*\*</sup>mould box size can vary according to component size

	Creaform Scanner BTX						
Measurements equipment	Scanner BTX	Probe BTX	Maxshot BTX	Scanner BTX			
Production year	2017	2017	2017	2017			
Serial number	MS-750 Elite	HP-Next/Elite	Maxshot	HS-700			
Model	MetraScan 750 Elite	HandyProbe Next/Elite	Maxshot/MetaScan 750 Elite	Handyscan 700			
Measuring range	16,6m³	16,6m³	16,6m³	16,6m³			
Accuracy (MPE)	0,078	0,078	0,044mm +0,015mm/m	0,020mm + 0,040mm/m			







# **Machining & Surface Treatment**

Modern machine park handling components up to 40 ton and varification of machine components with laser or CMM.

Work centers - Milling	PAMA -SR1	PAMA -SR2	PAMA -SR3	PAMA -SR4	PAMA -SR5	PAMA -SR6
Model	SpeedRam2000 TH25	SpeedRam2000 TH40				
BAETTR Number	69111	69112	69113	69114	69115	69151
Production Year	2009	2009	2009	2009	2009	2011
Serial Number	C7532	C7533	C7534	C7535	C7536	C7571
Axes						
X-axis	5.000 mm					
Y-axis	3390 mm (+160 - +3550)	3490 mm (+200 - +3690)	3462 mm (+238 - +3700)	3550 mm (+150 - +3700)	3471 mm (+230 - +3701)	4482 mm (+155 - +4637)
Z-axis	1.200 mm					
W-axis	1.000 mm					
V-axis	2.000 mm	2.500 mm				
B-axis	360.000°	360.000°	360.000°	360.000°	360.000°	360.000°
A-axis						
Turning table						
Plan	2.000X2.500 mm					
Max load	25.000 kg	40.000 kg				
Maindrive/spindel						
Max effect S1-100%	74 KW					
Spindle speed	3.500 rpm.					
Attachments	TS35 144					
Crane Capability	32 ton					
Access gate size W x H	5.500 X 5.000 mm	5.600 X 4.900 mm				

PAMA -SR7	PAMA -SR8	PAMA -SR9	PAMA -SR10
SpeedRam2000 TH40	SpeedRam2000 TH40	SpeedRam2000 TH40	SpeedRam2000 TH40
69152	69153	69154	69155
2011	2011	2011	2011
C7572	C7573	C7574	C7575
5.000 mm	5.000 mm	5.000 mm	5.000 mm
4496 mm (+155 - +4651)	4402 mm (+250 - +4652)	4502 mm (150 - +4652)	4496 mm (+155 - +4651)
1.200 mm	1.200 mm	1.200 mm	1.200 mm
1.000 mm	1.000 mm	1.000 mm	1.000 mm
2.500 mm	2.500 mm	2.500 mm	2.500 mm
360.000°	360.000°	360.000°	360.000°
2.000X2.500 mm	2.000X2.500 mm	2.000X2.500 mm	2.000X2.500 mm
40.000 kg	40.000 kg	40.000 kg	40.000 kg
74 KW	74 KW	74 KW	74 KW
3.500 rpm.	3.500 rpm.	3.500 rpm.	3.500 rpm.
TS35 144	TS35 144	TS35 144	TS35 144
32 ton	32 ton	32 ton	32 ton
5 600 X 4 900 mm	5 600 X 4 900 mm	5 600 X 4 900 mm	5 600 X 4 900 mm

PAMA -SM1	PAMA -SM2	PAMA -SM3	PAMA -SM4
SpeedMat - TR16	SpeedMat - TR16	SpeedMat - TR16	SpeedMat - TR16
69231	69232	69251	69252
2009	2009	2011	2011
C7779	C7780	C7211	C7213
3.000 mm	3.000 mm	3.000 mm	3.000 mm
1781 mm	2002 mm	1781 mm	1961 mm
(+300 - +2081)	(+79 - +2081)	(+119 - +1900)	(+160 - +2121)
2.700 mm	2.700 mm	2.700 mm	2.700 mm
0.800 mm	0.800 mm	0.800 mm	0.800 mm
360.000°	360.000°	360.000°	360.000°
1.600X2.000 mm	1.600X2.000 mm	1.600X2.000 mm	1.600X2.000 mm
12.000 kg	12.000 kg	12.000 kg	12.000 kg
52 KW	52 KW	52 KW	52 KW
3.500 rpm.	3.500 rpm.	3.500 rpm.	3.500 rpm.
10 ton	10 ton	10 ton	10 ton
5.500 X 5.000 mm	5.500 X 5.000 mm	5.600 X 4.900 mm	5.600 X 4.900 mm

Work centers - Turning	TACCHI	QIQIHAR	Gurutzpe
BAETTR Number	69321	69322	69323
Production Year	2009	2009	2020
Serial Number	HD3-1 69321		GLH 30.40.6
Axes			
X-axis	1.500 mm	1.100 mm	1.375 mm
Y-axis	N/A	N/A	±250 mm
Z-axis	4.700 mm	4.350 mm	6.000 mm
C-axis			
Plan/Head stock	Ø2.300	Ø2.200	Ø3.000
Max item weight	25.000 kg.	32.000 kg.	40.000 kg
Speed head stock	220 rpm.	160 rpm.	153 rpm.
Effect	100 KW	75 KW	142 KW
Spindel(rotating tools)			
Max effect S1-100%	22 KW	N/A	N/A
Spindle speed	1600 rpm.	N/A	N/A
Crane Capability	20 ton (2x10ton parallel connection)	20 ton (2x10ton parallel connection)	20 ton (2x10ton parallel connection)
Access gate size	(W X H) 5.500 X 5.000 mm	(W X H) 5.500 X 5.000 mm	(W X H) 5.500 X 5.000 m

Work Centers - Measuring	
Model	Zeiss 3CMM
Production Year	
Serial Number	
Axes	
X-axis	3.000 mm
Y-axis	5.000 mm
Z-axis	2.000mm
Plane	3.000x5.000
Max load	12.000 kg.
Crane Capability	5 t
Access gate size W x H	5.500 mm x 5.00 mm





## **Machining & Surface Treatment**

On-site shot blasting, metallization and painting, with IR-drying facilities guaranteeing quality according to C-standards.

The capability in our Surface Treatment is dimensioned to match the capabilities in the Machining department.

- 3 Manual sandblasting cabins with Grit
- 2 Metallization cabins: Capability for pure zink or zink / alu according customer requirement.
- 2 Paint cabins (1 with paint robot and 1 Manual)
- Gas catalytic IR drying cabin which gives a significantly faster cure than normal heat.

  Normal cure time for full cured is 7 days at 21 degrees C. With IR drying the curing time is 1½ hours.
- Paint Kitchen with 2K pumps to ensure unidirectional and correct mixing of paint
- Full process control, inspection, and documentation of the entire painting process

Laser tracker BTT				
Measurements equipment	Laser Tracker BTT	Laser Tracker BTT		
Production year	2016	2018		
Serial number	750731	751470		
Model	LEICA Absolute Tracker AT960-MR	LEICA Absolute Tracker AT960-MR		
Measuring range	40m	40m		
Accuracy (MPE)	0,015 + 0,006mm/m	0,015 + 0,006mm/m		







