

HISTORY AND DEVELOPMENT

1991, 6th March

- The company Unitherm, s.r.o. is incorporated in the Register of Companies of the Regional Court in Ústí nad Labem, part C, file 245.

1992

- The company becomes an agent for some prominent Danish companies dealing in the production of measuring and regulation technology in the field of heating technology.

1993 - 1994

- Moving to a newly built head office at 18, Arbesova Street, Jablonec n. Nisou.
- Creation of one of the first private metrological centers to perform certification of complete heat measuring gauges.
- Beginning of the project office in Prague and other centers in Strakonice and Brno, establishment of a subsidiary company Unitherm Slovakia, s.r.o.
- Getting of important orders including state commissions.

1995

- The company starts to take orientation at heating plants. It focuses on projects, assembly, and engineering activities. The activities in the building heating regulation and accounting are gradually reduced.
- Development and production of a house interchange station with a unique system of hot service water production protected as an industrial pattern.
- Diploma granted by the Association of Danish companies and medal conferred by His Royal Highness of Denmark, Prince Henrik, for outstanding services in the business relations between Denmark and the Czech Republic.

1996

- Successful execution of the first significant commissions in the industrial branch of heat production.

1999

- Strategic decision of the company concerning the business activity extension on an aluminium foundry. It is rented at the beginning, in the following year it is purchased as the Unitherm, s.r.o. property.
- Division of the company Unitherm, s.r.o. into two parts - Division Energo with the head office in Arbesova Street, Jablonec n. N. and a project office in Prague, and Division Foundry with the head office in Vedlejší Street, Jablonec n. N.

2000

- Sale of the subsidiary company Unitherm Česká Lípa, s.r.o.
- Through the success of the constructions, complying with the delivery terms, and by the failure free operation Unitherm wins the reputation of a renowned company in the field of heat production and becomes specialist in the key ready constructions of heat production plants.
- The expert team in the foundry is stabilized, the foundry expanded to include the technology of permanent mould casting. The foundry activity includes subsequent treatment of castings, such as impregnation, heat treatment, machining, and pre-assemblies.
- Acquisition of quality system certificate as per ČSN EN ISO 9002:1995 for aluminium alloy casting in sand moulds, permanent moulds, and low pressure moulds as well as impregnation of the castings.

2001

- Gradual modernization of the foundry, purchase of a production line helps the foundry to get many new customers, especially in European countries, later on in the U. S. A. too.

2002 - 2003

- Activities of the Division Energo continue successfully, the constructions of boiler rooms are realized, gas and heat supply lines in villages, towns, and factories are laid.
- Division Foundry defends the quality system according to the requirements of the standard EN ISO 9001:2000 and the system of environmental management according to the requirements of the standard ČSN EN ISO 14001:1997.

2004

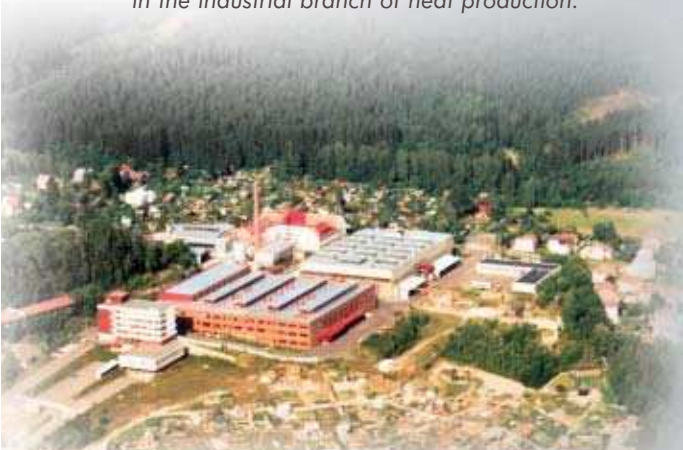
- Beginning of the machining workshop reconstruction. A new schedule of the machines and other necessary workstations in the space of a new production shop is made, purchase of a new machining center Deckel 80U.

2005

- Administrative change of company head office to 25 Vedlejší Street, reg. No. 88, Jablonec n. Nisou.
- Re-name of Division Energo to Division Heat Technology, Division Foundry to Division Foundry - Machining Shop.
- Preparation of the quality system certification of Division Heat Technology.
- Preparation for moving the Jablonec office of Division Heat Technology in the premises at 23, Vedlejší Street, reg. No. 4838.

1997 - 1998

- Unitherm gradually purchases the company INTOP CZ s.r.o. from Česká Lípa. In this way the company becomes the shareholder of 35% of the Českolipská teplotárenská a.s. (Česká Lípa heat production company a.s.). The company INTOP CZ s.r.o. is re-named to Unitherm Česká Lípa s.r.o. and becomes the assembly base for Unitherm, s.r.o.
- Building of a new plant as a central hot water resource executed for the town of Česká Lípa with the output 58 MW including the reconstruction of a larger part of heat distribution lines.



ALUMINIUM ALLOYS

After the inspection of attested Al alloy from the steel-works the entrance check of chemical composition of the alloy by the apparatus Spectrocast is performed. The achieved values are compared and stored.



Chemical composition of alloys (%)

Alloy	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Admixtures		Al Rest
												Each	Total	
AlCu4MgTi EN 1706 21000	0,2	0,35	4,2 - 5,0	0,1	0,15 - 0,35		0,05	0,1	0,05	0,05	0,15 - 0,3	0,03	0,1	Al Rest
AlSi7Mg0,3 424334 EN 17064 2100	6,5 - 7,5	0,19	0,05	0,10	0,25-0,45			0,07			0,08-0,25	0,03	0,10	Al Rest
AlSi10Mg (α) 424331 EN 1706 43000	9,0-11,0	0,55	0,05	0,45	0,20-0,45		0,05	0,10	0,05	0,05	0,15	0,05	0,15	Al Rest
AlSi8Cu3 DIN 226 EN 1706 46200	7,5 - 9,5	0,8	2,0-3,5	0,15-0,65	0,05-0,55		0,35	1,2	0,25	0,15	0,25	0,05	0,25	Al Rest
AlSi9Cu1Mg 424384 EN 1706 46400	8,3 - 9,7	0,8	0,8-1,3	0,15-0,55	0,25-0,65		0,20	0,8	0,10	0,10	0,10-0,20	0,05	0,25	Al Rest
AlSi12 (Cu) DIN 231 EN 1706 47000	10,5-13,5	0,8	1,0	0,05-0,55	0,35	0,10	0,30	0,55	0,20	0,10	0,20	0,05	0,25	Al Rest

ALUMINIUM ALLOYS

The verified alloy is released for the melting shop where it is melted in gas furnaces at 730°C and re-poured to electric holding furnaces. The alloy is refined here using cleaning salts, modified with tablets and degasified in the FDU equipment by the company Foseco. The chemical composition is checked by the apparatus Spectrocast again, the process of solidification and granularity of the result casting being checked in the thermoanalyser Ideco. The alloy modified in this way is ready for casting.



Mechanical properties of alloys

	EN 1706	Condition	SAND MOULD CASTING				PERMANENT MOULD CASTING			
			σ_{pt} (MPa)	$\sigma_{0,2}$ (MPa)	$\delta 5$ (%)	HB	σ_{pt} (MPa)	$\sigma_{0,2}$ (MPa)	$\delta 5$ (%)	HB
AlCu4MgTi	21000	T4	300	200	5	90	320	200	8	95
AlSi7Mg0,3 424334	42100	F	140	80	2	50	170	90	2,5	55
		T6	230	190	2	75	290	210	4	90
		T64				250	180	8	80	
AlSi10Mg (α) 424331	43000	F	150	80	2	50	180	90	2,5	55
		T6	220	180	1	75	260	220	1	90
		T64				240	200	2	80	
AlSi8Cu3 DIN 226	46200	F	150	90	1	60	170	100	1	75
AlSi9Cu1Mg 424384	46400	F	135	90	1	60	170	100	1	75
		T6					275	235	1,5	105
AlSi12 (Cu) DIN 231	47000	F	150	80	1	50	170	90	2	55

F..... In cast condition without heat treatment
T4..... After melt annealing and natural aging

/ T6..... After melt annealing and full artificial aging
/ T64..... After melt annealing and artificial aging under incomplete aging conditions

FOUNDRY

SAND MOULD CASTING



PATTERN PRODUCTION

Patterns are manufactured of several sorts of wood (maple, alder, spruce); surface finish and corrections of the models are carried out. They are stored in tempered rooms with stable temperature and humidity.

CORE PRODUCTION

Drying of sand is performed in a drying machine with capacity 16 tons of sand per day, where the heat is produced using a natural gas burner. The cores are manufactured in core boxes which are filled with a mixture of silicious sand of granularity 0.27 mm and water glass, and subsequently hardened by carbon dioxide (CT method). After taking the core box out, the last finishing procedure of the cores using graphite spray coating Helum G - K is made. By burning out of the spray coating the cores are deprived of remnant humidity and ready for inserting in the mould and casting. The drying of the sand is carried out in the drying machine with capacity 16 tons of sand per day, where the heat is produced using a natural gas burner.



Manual core production



Mechanical core production



Burning of core graphite spray coating



MOULD SAND

For moulding the sand with mid-granularity 0.14 mm is used.

FOUNDRY

SAND MOULD CASTING TECHNOLOGY

MANUAL MOULDING

- single piece to small serial production, prototype and master patterns

MOULDING UNDER CRANE

Photo (A)

- frame dimension max. 1300 x 1300 mm
- single piece to small serial production



(A)



MACHINE MOULDING

Photo (B)

- moulding machines Foromat using the jolt ramming principle with the mechanical pressing of the moulding mixture onto a clamped pattern
- frame dimension max. 600 x 500 mm
- small serial to serial production



(B)

PULSE MOULDING

Photo (C)

- moulding machine HSP1 by the company HWS using the principle of compressed air mixture moulding
- frame dimension 650 x 500 mm
- serial production with a high quality surface, minimum bevels and high accuracy



(C)

FOUNDRY

PERMANENT MOULD CASTING



(A)

MOULD PRODUCTION

The permanent moulds and moulds are produced in a co-operation production. A complete drawing documentation is prepared by our designer team.



(B)

PERMANENT MOULD CASTING TECHNOLOGY

GRAVITY CASTING

- separate stands with hydraulic control
- casting machines CGU and CGH
- casting weight 0.1 - 20 kg

Photo (A)

Photo (B)

LOW-PRESSURE CASTING

- casting machines CNS 10.23
- casting weight 1 - 40 kg

Photo (C)



(C)

OTHER OPERATIONS WITH SAND AND PERMANENT MOULD CASTINGS

Cutting off and grinding of ingate systems and risers.

Blasting using NiCr balls or corundum mixture.

Heat treatment by melt annealing with subsequent hardening or annealing only (so called natural aging).

Impregnation on a unique impregnation line.

Machining in the company own machining shop.

Surface finish provided.

Sub-group assemblies.

QUALITY CONTROL

The customer's requirements and expectations are complied with through the certified systems of quality management and environmental management.



MACHINING SHOP

Elaboration of drawing documentation for permanent mould and mould production.

Design and production of fixtures in the company tool making shop.

Machining of aluminium castings.

Surface finishing of parts by painting, anodizing etc.

Sub-group assemblies.



(A)



(B)

MACHINERY

CNC MACHINING CENTERS AND CNC MACHINES

- gripping dimensions 400x400 mm, 550x300x425 mm, 630x400x630 mm

- max. grip surface up to 3000x800 mm

- DECKEL DMC 80U

Photo (A)

- CHIRON FZ 12 WM, CHIRON FZ 18 WM

Photo (B)

- FSS 80 CNC, FS 50 CNC

- FGS 25/32 CNC, FGSQ 32 CNC B



LATHES

- rotation diameter 5 - 1250 mm

- MAZAK SQT 200M

Photo (C)

- BINNS-BERRY CNC

- DF2/3 CNC H645, SN 55B - 71B, SUI 63-80



(C)

MILLING MACHINES, DRILLING MACHINES, GRINDING MACHINES

QUALITY CONTROL

The customer's requirements and expectations are complied with through the certified systems of quality management.



PRODUCTS

Production of components for engineering industry, agriculture, health service, automotive, food and textile industry and others.

Approximately 90 % of production is exported to European countries and the U.S.A.

