KAMAZ

PUBLICLY
TRADED
COMPANY

FOUNDRY PLANT

2020

General information

The company operates in such market segments as: automotive industry, valve industry, rolling-stock manufacturing.

Competitive advantages:

- ✓ Full cycle of new product creation: marketing research, designing, preproduction, manufacturing and sales. The enterprise is fitted out with state-of-the-art equipment and has a wide range of new casting technologies.
- ✓ The foundry is diversified: it can both fulfill the orders of automotive customers, and quite easily focus on other markets: casting for the railways, oil and gas industry, public utilities.
- ✓ Design and engineering documentation is developed through using packages: *UnigraphicsNX*; *LVMFlow3.1*; *ProCAST2008* (foundry process simulation).
- ✓ There is a wide range of checkout equipment to control the quality of manufactured castings at each stage of a manufacturing process. The chemical composition rapid analysis of the alloys used in production is performed in a spectral laboratory.

Cast Iron production

Total building area	388,9 ths. m^2
Technological cycle	Full: from cast iron melting to castings finish-machining. Alloy grades: *GG20,GG25; GGG40, GGG50, GGG60; FC275*.
Metal melting	Duplex process in *Swindell-Dressler* furnaces
Designed capacity	238 ths. t
Melting shop facility	9 electric arc melting furnaces – 50 t capacity, 7 electric arc holding furnaces – 75 t. In commissioning there is a complex of 2 *OTTO JUNKER* induction 25 t furnaces.
Molding shop facility	5 *CE-Cast* automatic lines (3 lines with flask clear dimension of 1500x1100x400; 2 lines – 1100x750x300), 3 *Disamatic 2013* lines (cob size 680x480x120/300), 2 *HWS* molding lines (1500x1100x400; 1100x750x300).
Automated hot-metal charging process	*ABB* and *OTTO JUNKER* Automated charging machines on *HWS* automated molding lines
Heat treatment, cleaning and chipping	*Pangborn*, *Holcroft* machines, Foundry plant hydraulic wedges, *AutoGrinding* and *Maus* machining centers
Core making shop	*Sutter* coremaking machine (hot, cold (SO2) process), *Laempe* coremaking machine (Amin process). *IMF* coremaking machine is in commissioning (Amin process).

Steel casting production

Total building area	88,7 ths. m^2
Technological cycle	Full: from steel melting to castings finish-machining. Alloy grades: C22,Ck22, C25E, C35,Ck35, 30chl, L30H, A352GrLCC, ASTMA, A352, 34CrMo4 and their variations.
Designed capacity	49 ths. t castings per year
Melting shop facility	9 DSP-12H2 arc furnaces – 12 t capacity, 3 IST 1/05 induction furnaces.
Core making shop facility	*U900* and *315E* machines (Shalko process).
Molding shop facility	2 *CE-Cast* automatic lines (1500x1100x400; 100x750x300), 1 *Disamatic* line (680x480x120/300).
Heat treatment, cleaning and chipping	*Pangborn* and *Holcroft* machines

Technologies of the existing production

Non-ferrous castings production

Total building area	123,0 ths. m^2
Technological cycle	Full: from alloy melting to castings finish-machining.
Designed capacity	34 ths. t castings per year
Technologies	1. Castings production process from aluminum alloys by high pressure die casting method (with cold chamber and locking pressure of 400, 700, 1100 t). Alloy grades: *GD ALSi9Cu3, GD ALSi9Cu3(Fe), GD ALSi12, GD ALSi12(Cu), DIN 1725*. 2. Castings production process from aluminum alloys by low pressure casting method. Alloy grades: *GD ALSI9MG0,3 T6*. 3. Castings production process from aluminum alloys by gravity die casting method. Alloy grades: *GK-AlSi10Mgwa, GK-AlSi92Cu3*. 4. Castings production process from zinc alloys by high pressure die casting method. Alloy grades*: Zn85Al10Cu5, Zn95Al4Cu1, Zn95Al1Cu4*. 5. Castings production process from copper alloys by Autoforge-process. Alloy grades: *Cu60Zn37Mn2, G-CuZn37Al1, CuAl10Fe3Mn2*. 6. Castings production process by continuous casting with Technika Guss machine. Alloy grades: *Cu60Zn37Mn2, G-CuZn37Al1, SnPbBz10, GCuSn5Zn5PbRg5*.

Technologies of the existing production

Non-ferrous castings production (continuation)

Melting facility	5 gas and 3 induction crucible furnaces for aluminum melting; 6 gas and 1 induction crucible aluminum holding furnaces, 3 induction crucible furnaces for copper and cast iron alloys preparation, 2 high frequency induction crucible furnaces and 3 submerged-resistor induction furnaces for brass and bronze alloys preparation, 2 submerged-resistor induction furnaces for zinc alloys preparation.
Foundry facility	*Wotan*, *Idra Press SPA* high pressure die casting machines, *Dimo* low-pressure casting machines, *LPM* aluminum alloy low-pressure casting system, 4, 5, 8 position rotary gravity die casting machines, *Fata* single-station machines, *Albany Machine* for Autoforge-process based on copper alloys, *Technica Guss GmbH* continuous casting machine.
Heat treatment, cleaning and chipping	*Pangborn* and *Holcroft*, *Fata* corner-cutting machine, *LMU FM-2000 6U LPM* robotized cleaning line.

Special types of castings productions

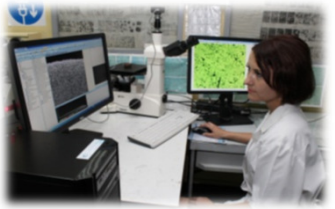
Total building area	25,8 ths. m^2
Designed capacity	2,9 ths. t castings per year
Technologies	Investment casting: 28 *Ajax* induction crucible furnaces with acid lining of 0,25–0,4 t capacity. Investment casting vacuum embedding: *TRUCAST* machine. Piston rings production: Induction crucible furnaces of 2,5 t capacity, Metal mold piling semiautomatic molding machine. Vacuum-film molding: Rotating machine developed by foundry professionals of Foundry plant. Stack moulding machine Dimensions: 600x600x50

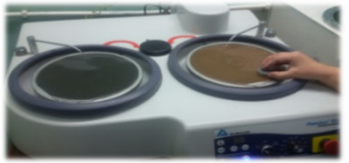
Foundry tooling production

Total building area	123,0 ths. m^2
Technological cycle	Full: designing and manufacturing from raw parts up to finished tooling: die molds, gravity dies, core boxes, patterns, press tools, accessories.
Preproduction workshop equipment	*SMO-32*, *DECKEL* FP4/60, *DECKEL* FP5/80, *SFY* 98/108 CTC machines. Big equipment fleet of multi-purpose equipment, heat treatment and electroplating workshops.
Simulation of foundry tooling	CAD-packages: *Unigraphics NX*, *SolidEdge*. Modeling (simulation) of foundry processes in *LVM Flow CV 4.60R3*, *ProCast*.
Equipment of foundry tooling manufacturing shop	*OKUMA*, *SMO*, *CBKOZ*, *FKRS*, *HARTFORD*, *MAKINO*, *MAHO*, *MITSUBISHI* CNC machining centres and machines. Large general-purpose equipment stock.
Manufacture of foundry tooling shaping parts from plastics	CNC machines: *I-mes SFY* 98/108, *DECKEL* FP4/60, *DECKEL* FP5/80.
Control of Tooling Manufacturing Accuracy	*SPECTRUM* 7/10/6 RDS; *Contura* 10/16/7; *Contura* 7/10/6 three-coordinate measuring machines. *ATOS 2* non-contact digitizing and measuring system.

Foundry Central Laboratory

Spectral equipment	4 *OBLF* model optical emission spectrometers, 3 – *Spectrolab* model, 1 – *Baird* model, for cast iron, steel, nonferrous alloys chemical composition express analysis, 1 *PMY-Master* model, for tooling raw part material grade definition.
Metallographic facilities	*NRO-3000*, *NRO-250*, *TSh-2M*, *TB-5004* models hardness gages, *ZD-10*, *ZD-40*, *MIR-200K*, *EDTs-30K* tensile testing machines, *Meiji IM* inverted metallurgical microscopes, including *Thixomet* with image processing and analysis software.
Sample preparation equipment	*Swisher* grinding machines, *Delta*, *AbrasiMet*, *Metasecar* material-cutting machines, *Metaserv*, *Montasupal* grinding and polishing machines, *Simplimet*, *Powermet* forcing presses, *16K20* lathes, *Behringer* band-saw.
Analytical equipment	*Eltra*, *AUS* carbon and sulfur analyzer, *Quant* atomic absorption spectrometer, *Crystallux* gas chromatograph.
Nondestructive control method equipment	*Seifert*, *Bosello* X-ray TV unit, *Filin* X-ray unit, *DIO* reflectoscope.





Contact details:

Head of marketing and sales of foundry production
Industrial Components KAMAZ, LLC
Valentin V. Kuchinskiy
phone: +7(8552) 33-97-19
e-mail: KuchinskiyVV@kamaz.ru

Deputy general director for commercial affairs
Industrial Components KAMAZ, LLC
Rustem R. Sunagatov
phone: +7(8552) 55-19-55
e-mail: rusts@kamaz.ru