

Forged bars and stampings

CATALOGUE 2011



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Information about Mechel

and its enterprises producing forged bars and stampings

Mechel, which was founded in 2003, is a leading Russian mining and steel company, comprising producers of coal, iron-ore concentrates, ferroalloys, steel, steel rolled products, high value added steel products, heat energy and electricity. Mechel owns industrial plants in 13 Russian regions, the United States, Romania, Kazakhstan, Bulgaria and Lithuania. Its facilities also include three trading ports and its own transportation company. Mechel markets its products both domestically and abroad.

Mechel's steel segment produces and sells carbon and special steel long products, unalloyed and stainless steel flat products, forged bars and stampings made of special high-grade steel and alloys, and also a large variety of customized steel shapes billets.

Forged and stamped products are manufactured by Mechel OAO's subsidiary called Urals Stampings Plant OAO (based in the town of Chebarkul, Chelyabinsk Region), and by its affiliates located in the cities of Chelyabinsk and Izhevsk (Izhevsk is situated in the Udmurt Republic, Russia).

The Urals Stampings Plant

Chebarkul, Chelyabinsk Region, Russia

The Urals Stampings Plant is Russia's largest producer of stampings made of special steel and alloys. The Chebarkul plant owns the world's most powerful counterblow hammer with an impact energy of 1470 kJ; it produces stampings weighing up to 2.5 tonnes and up to 4 metres long. The plant also can make solid-rolled ring blanks of up to 4 metres in diameter, up to 1 metres high, and weighing up to 6.3 tonnes. Urals Stampings Plant's Chelyabinsk facility can make open die forged bars weighing up to 12.5 tonnes.

The Chelyabinsk unit is equipped to conduct heat treatment (annealing, normalizing, hardening, quenching and tempering, etc.), machining of round and double-diameter rough forged bars and forged washers, abrasive grinding and milling of square and rectangular rough forgings.

Forged bars are made from structural steel, alloy steel, tool steel, stainless steel and heat-resistant alloys manufactured by electric arc furnace with secondary steel refining, and also by electroslag, vacuum and induction arc remelting.



The Urals Stamping Plant holds a certificate of compliance issued by TÜV Rheinland InterCert affirming that its quality management system complies with the international ISO 9001:2008 standard. Its products have been certified by a number of Russian and overseas organizations.



Certificate for the manufacture of ties

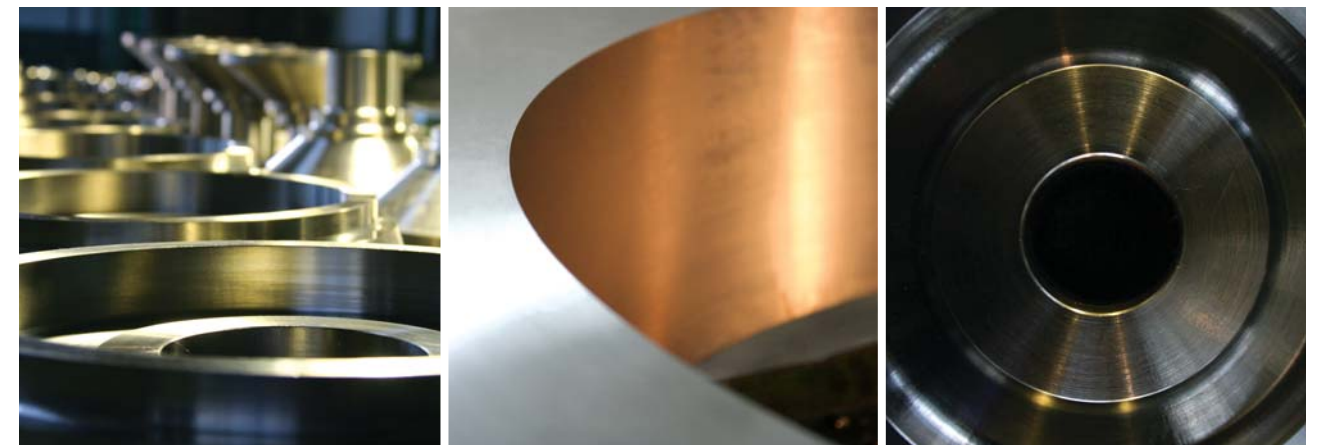
Issued by: Association of American Railroads

Date of issue: 04.05.2011
Expires on: 04.05.2014

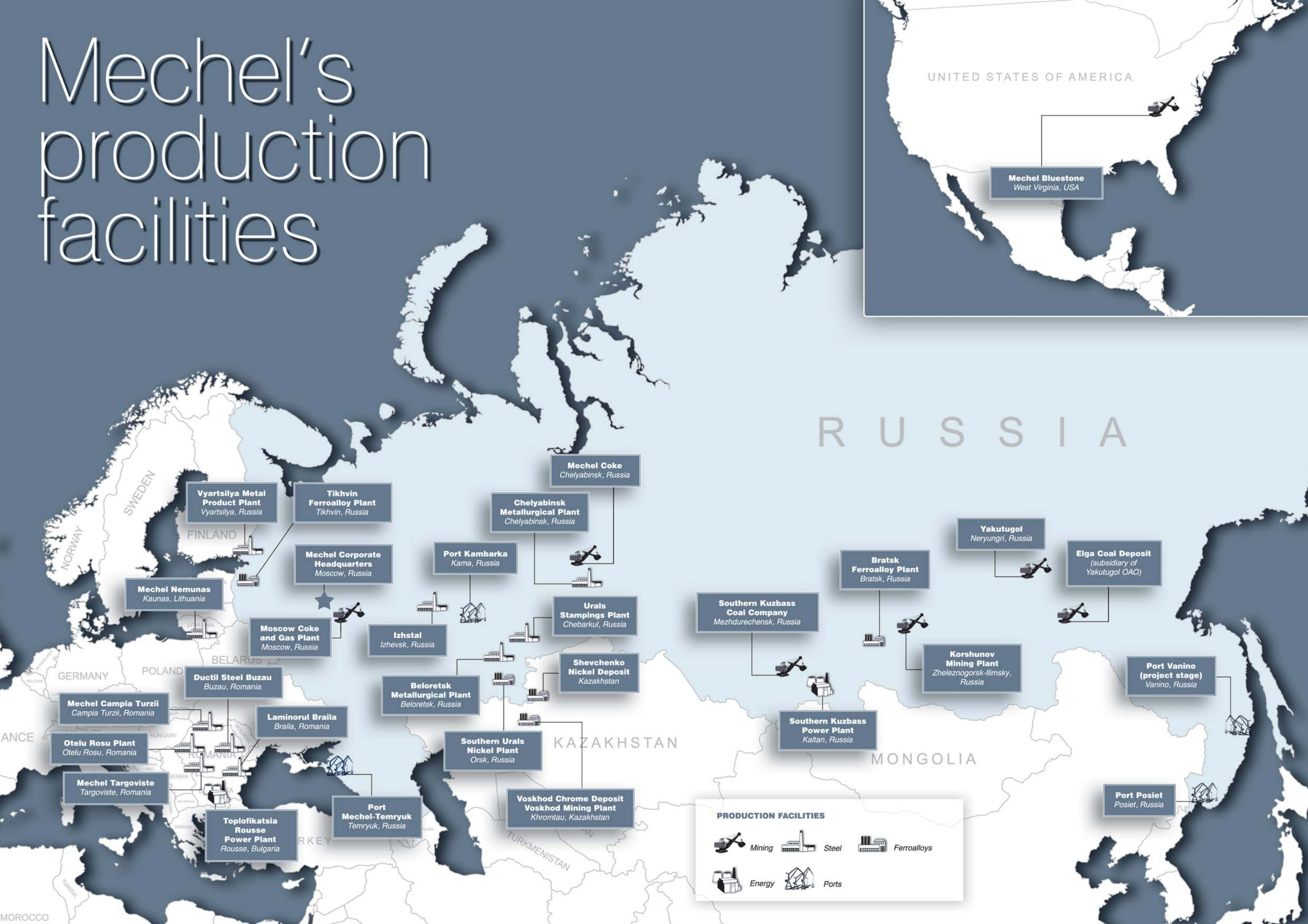


Certificate of compliance with the international ISO 9001:2008 (TUV Rheinland InterCert)

Date of issue: 23.12.2009
Expires on: 22.12.2012







Mechel's production facilities



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Crankshafts, connecting rods





SINGLE-THROW CRANKSHAFT	FIVE-THROW CRANKSHAFT	CONNECTING ROD WITH COVER	CONNECTING ROD WITHOUT COVER
			
Dimensions / Mass			
Length: up to 1500 mm Mass: 3–675 kg	Length: up to 3000 mm Mass: 470–1550 kg	Mass: 30–100 kg	Mass: 3–100 kg
Steel grade			
structural steel grades			
Standards for chemical composition			
DIN EN 10083–2; DIN EN 10083–3; DIN EN 10084			

Technical requirements (subject to agreement at the time of ordering):

- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure control;
- UST as per SEP 1921, class C/c;
- carrying out of mechanical properties on heat-treated specimens or in delivery;
- rating of non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

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Fluid power systems



ROD	ROD CLEVIS	FORK	EYELET
			
Dimensions / Mass			
Length: up to 1500 mm Mass: 5–800 kg	Length: up to 1500 mm Mass: 10–800 kg	Mass: 1–50 kg	Mass: 4–250 kg
Steel grade			
structural steel grades			
Standards for chemical composition			
DIN EN 10083–2; DIN EN 10083–3; DIN EN 10084			

Technical requirements (subject to agreement at the time of ordering):

- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure;
- UST as per SEP 1921, class C/c;
- mechanical properties on heat-treated specimens or in delivery;
- non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

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Products for oil and gas industry




BODY	BODY	PLUG	PLUG WITH JOURNAL
			
Dimensions / Mass			
Mass: 50–450 kg	Mass: 60–300 kg	Mass: 280–1150 kg Nominal inside diameter: 1.5–12"	Mass: 4–320 kg Nominal inside diameter: 1.5–12"
Steel grade			
structural steel grades			
Standards for chemical composition			
DIN EN 10083–2; DIN EN 10083–3; DIN EN 10084			

Technical requirements (subject to agreement at the time of ordering):

- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure;
- UST as per SEP 1921, class C/c;
- mechanical properties on heat-treated specimens or in delivery;
- non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

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Handling devices

LOAD HOOK	PULL HOOK	LOAD HOOK
		
Dimensions / Mass		
Mass: 2–63 mt	Mass: 0.5–16 mt	Mass: 2–63 mt
Steel grade		
structural and stainless steel grades		
Standards for chemical composition		
by agreement between the purchaser and the supplier		

Technical requirements (subject to agreement at the time of ordering):

- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure;
- UST as per SEP 1921, class C/c;
- mechanical properties on heat-treated specimens or in delivery;
- non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

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Rolled rings

for general machinery and gas turbine engine




RING OF RECTANGULAR CROSS SECTION	SECTION-SHAPED RING	SECTION-SHAPED RING
		
Dimensions / Mass		
<p>OD: up to 4000 mm Height: up to 1000 mm Mass: 20–6300 kg</p>		
Steel grade		
structural steel grades		
Standards for chemical composition		
DIN EN 10083–2; DIN EN 10083–3; DIN EN 10084		

Technical requirements (subject to agreement at the time of ordering):

- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure;
- UST as per SEP 1921, class C/c;
- mechanical properties on heat-treated specimens or in delivery;
- non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

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Billets for equipment of cars

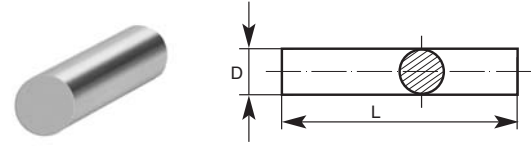
SHAFT	GEAR	RIM
		
Dimensions / Mass		
Mass: 250–870 kg	OD: up to 1000 mm Mass: 110–500 kg	OD: up to 1000 mm Mass: 110–500 kg
Steel grade		
special steel grades	spring steel grades	structural steel grades
Standards for chemical composition		
by agreement between the purchaser and the supplier		

Technical requirements (subject to agreement at the time of ordering):

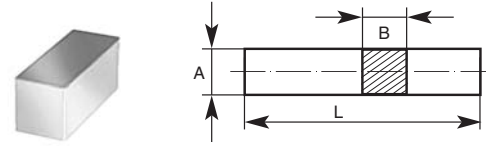
- heat treatment (normalization, quenching and tempering);
- premachining;
- macrostructure;
- UST as per SEP 1921, class C/c;
- mechanical properties on heat-treated specimens or in delivery;
- non-metallic inclusion content as per DIN 50602 (K4) or ASTM E45, method A (A, B, C, D);
- grain size as per ASTM E112 or DIN 50601;
- hardenability;
- hardness.

Forged bars

FORGED ROUND BARS (also machined (rough turned))



FORGED SQUARE AND RECTANGULAR BARS (also machined (abrasive ground or milled))



Dimension (after machining)

D: 90–800 mm
L: up to 7000 mm
(D: 90–720 mm
L: up to 6000 mm)
Mass:
up to 12500 kg
(up to 11000 kg)

D: 90–570 mm
L: up to 6300 mm
(D: 90–540 mm
L: up to 6000 mm)
Mass:
up to 6500 kg

A: 80–630 mm
B: 180–980 mm
L: 1000–4000 mm
B/A not more than 5
Mass:
up to 12500 kg
(up to 12000 kg)

A: 110–380 mm
B: 180–730 mm
L: 1000–3000 mm
Mass:
up to 12500 kg
(up to 11500 kg)

Standards for steel product

by agreement between
the purchaser and the supplier

by agreement between
the purchaser and the supplier

Steel grades

S355J2G3; A105;
C15E(R); C22E(R);
C35E(R); C45E(R);
C55E; C60E;
16MnCr(S)5;
18CrNiMo7-6;
25CrMo4;
30CrNiMo8;
34CrNiMo6;
39NiCrMo3;
42CrMo(S)4
and others

X2CrNiMo18-14-3;
X6CrNiTi18-10;
X12Cr13;
X20Cr13;
X30Cr13;
X46Cr13
and others

1.2311; 1.2767;
1.2714; 1.2344;
1.2080; 1.2365;
1.2379; 1.2343;
L6; H10; H11;
H13; D2; D3
and others

S355J2G3; A105; C15E(R);
C22E(R); C35E(R);
C45E(R); C55E; C60E;
16MnCr(S)5; 18CrNiMo7-6;
25CrMo4; 30CrNiMo8;
34CrNiMo6; 39NiCrMo3;
42CrMo(S)4 and others

1.2311; 1.2767;
1.2714; 1.2344;
1.2080; 1.2365;
1.2379; 1.2343;
L6; H10; H11;
H13; D2; D3
and others

Standards for chemical composition and technical requirements

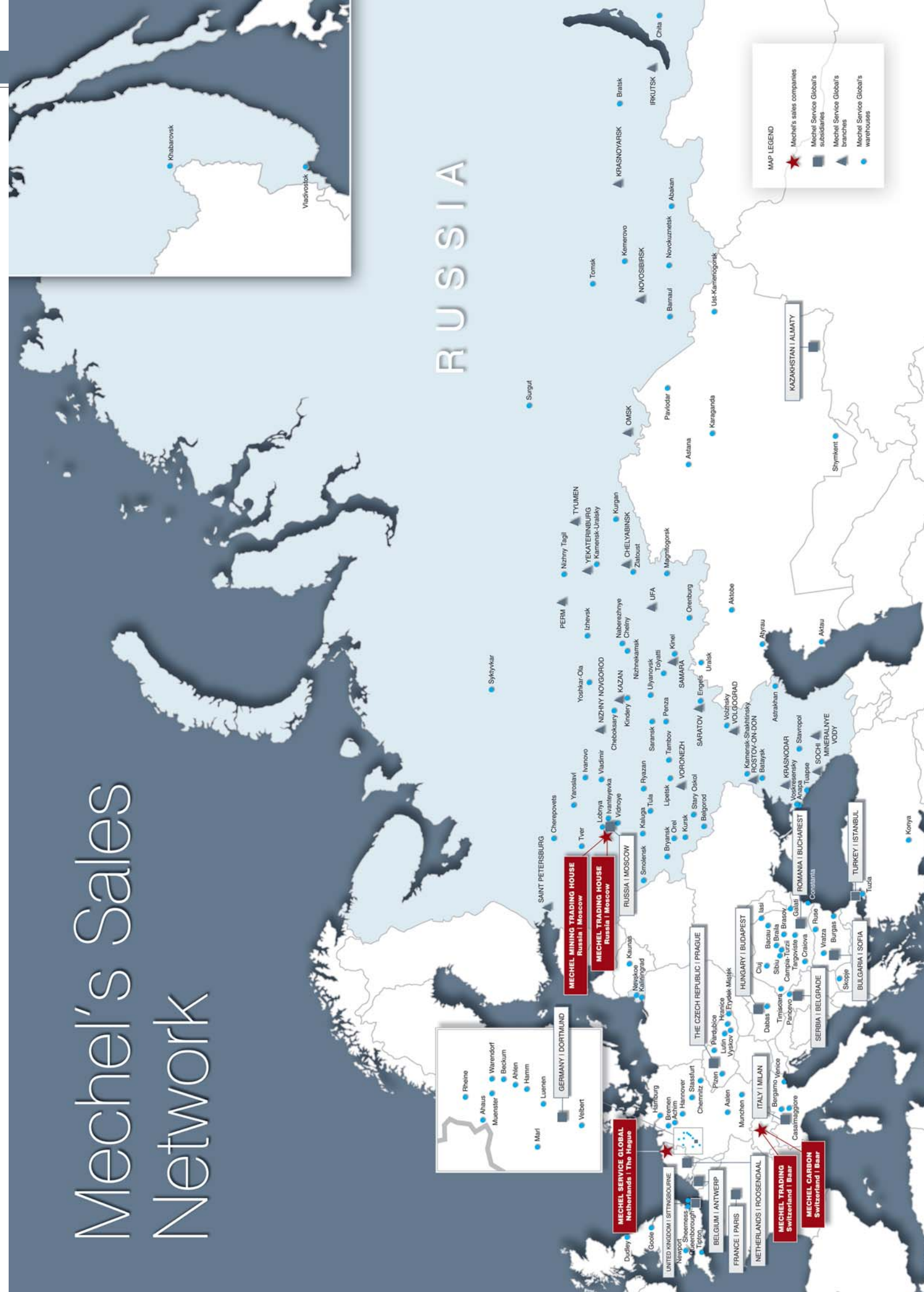
DIN EN 10250-1;
DIN EN 10250-2;
DIN EN 10250-3;
DIN EN 10083-3;
DIN EN 10084;
SEW 550;
ASTM A29;
ASTM A350

DIN EN 10250-4;
DIN EN 10088-1(2)

DIN EN ISO 4957;
ASTM A 681

DIN EN 10250-1;
DIN EN 10250-2;
DIN EN 10250-3;
DIN EN 10083-3;
DIN EN 10084;
SEW 550;
ASTM A29;
ASTM A350

DIN EN ISO 4957;
ASTM A 681



Mechel's Sales Network

One of Mechel's important competitive advantages lies in its sales policy, aimed at creating long-term partnership ties with the company's clients and meeting their needs in steel products and services as fully as possible. We can fulfill any order regardless of size and complexity. Our clients can order various steel products made from an assortment of special steels.

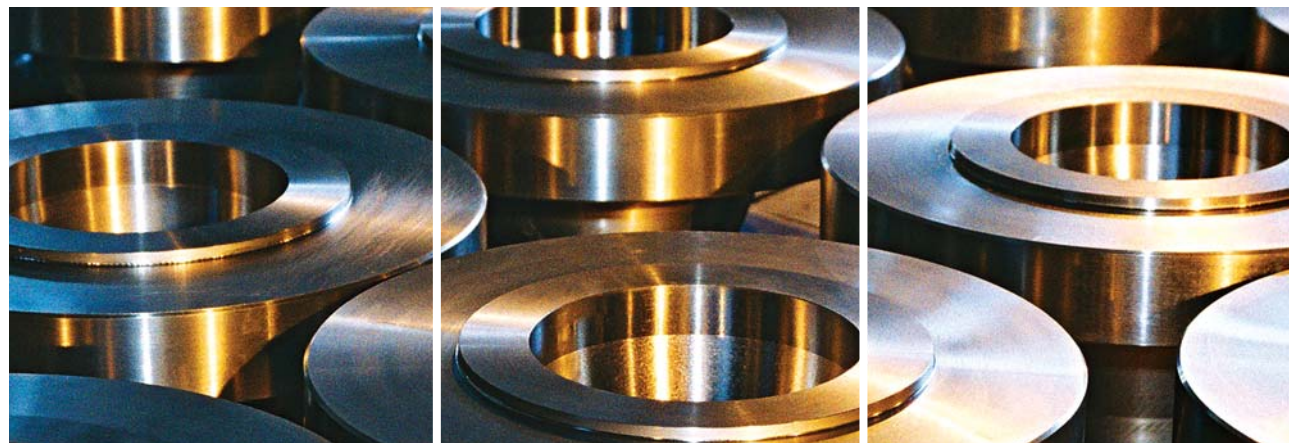
For our clients' convenience and to increase the efficiency of our sales, we created the international sales network **Mechel Service Global B.V.**, which focuses on marketing our steel products domestically as well as in Europe and the CIS member states. In addition to sales of steel products, the company offers a wide range of services within its storage facilities.

The company's headquarters are located in the Hague (the Netherlands). They function as a coordination center for steel product sales and ensure efficient interaction between our clients and Mechel Group's steel producers.

Mechel Service Global B.V.'s network comprises over 120 branches in 15 countries. It includes a Russian company and subsidiaries in Eastern and Western Europe, Turkey and Kazakhstan.

Wholesale deliveries of steel products to the countries of the Persian Gulf, Middle East, South-East Asia and Africa are handled by **Mechel Trading AG**. The company is based in Baar, Switzerland, with more branches due to be opened shortly in Algeria and the United States.

The extensive sales network, with its highly proficient staff, storage infrastructure, sweeping product range and sufficient stores, allows us to fulfill our clients' needs fully and promptly.



PRODUCERS

Company	Address	Tel / Fax	E-mail
URALS STAMPINGS PLANT	7, Dzerzhinskogo ul., Chebarkul, Chelyabinsk Region, 456440, Russia	+7 (35168) 9 26 06, 9 22 73, 9 23 80 +7 (35168) 9 25 90, 9 23 93	val@uralkuz.ru
URALS STAMPINGS PLANT'S CHELYABINSK FACILITY	14, 2-ya Paveletskaya ul., Chelyabinsk, Chelyabinsk Region, 454047, Russia	+7 (351) 725 38 81 725 39 99 +7 (351) 725 41 40	amezentsev@mechel.ru
URALS STAMPINGS PLANT'S IZHEVSK FACILITY	6, Novoazhimova ul., Izhevsk, Udmurt Republic, 426006, Russia	+7 (3412) 91 00 59 +7 (3412) 91 05 26	fedorovich@izhstal.ru

SALES BRANCH

Company	Address	Tel / Fax	E-mail
MECHEL TRADING AG	CH-6340 Baar Switzerland Oberdorfstrasse 11	+41 768 45 00 +41 768 45 01	info@mechelgroup.com
MECHEL SERVICE GLOBAL B.V. Head Office	Parkstraat, 20 2514 JK, The Hague, the Netherlands	+31 70 844 00 00 +31 70 844 00 01	msglobal@mechel.com
Mechel-Service (Russia)	35, Mishina ul., 127083, Moscow, Russia	+7 (495) 739 98 80	-
Mechel Service Belgium B.V.B.A	Generaal Lemanstraat 27, 2018 Antwerp, Belgium	+32 3 259 02 00 +32 3 259 02 09	info.msbelgium@mechel.com
Mechel Service Bulgaria EOOD	Bulgaria, Sofia 1618 168, Tsar Boris III Blvd.	+359 2 489 44 43 489 44 53 +359 2 489 13 88	msbg@mechel.com
Representative office in Macedonia	Macedonia, Skopje 1000	+389 78 230 237 +389 23 083 040	

SALES BRANCH

Company	Address	Tel / Fax	E-mail
Mechel Service UK Ltd.	St. Georges Business Park, Unit C15 Castle Road, Sittingbourne ME10 3TB, UK	+44 1795 432 533 +44 1795 432 540	–
Mechel Service Hungary Ltd.	17 Hermina Road, Hermina South Tower, 3 rd floor 1146 Budapest, Hungary	+36 1 471 9640 +36 1 471 9654	hungary@mechel.com
HBL Holding GmbH (Germany)	Freie-Vogel-Str. 391, 44269 Dortmund, Germany	+49 231/79304100 +49 231/79304172	holding@hbl.de
Mechel Service Italy	Via Settembrini, 1 20124, Milano, Italy P.IVA 03918540273	+39 0375 285 711 +39 035 1990 3218	msitaly@mechel.com
Mechel-Service Kazakhstan LP	151/115, Abay pr. (Radostovca ul.) Alatau Business Centre, off. 309 050009, Almaty, Republic of Kazakhstan	+7 727 391 06 03/04 +7 727 391 06 05/06	mechel_almata@mechel.ru
WNL Staal B.V.	Schotsbossenstraat 14 4705 AG Roosendaal, Netherlands	+31 165 39 10 30 +31 165 39 13 35	info@wnlstaal.com www.wnlstaal.com
Mechel Service Romania S.R.L.	Branduselor Street, Nr. 2-4, fl. 5, district 3 031256, Bucharest, Romania	+4 031 104 1000 +4 031 104 1029	msr@mechelservice.ru
Mechel Service SRB DOO	Batajnichki drum, 23 11080, Belgrade, Zemun, Serbia	+381 11 414 0000 +381 11 219 4702	mechel.serbia@mechel.com
Ramateks Metal A.S., Turkey	Mahir zi Caddesi, Dtay is Merkezi, B Block, No 19/2, Kat: 1 34662, Altunizade/Uskudar/Istanbul, Turkiye	+90 216 651 49 10 +90 216 651 49 15	info@ramatexmetal.com
Mechel Service France SAS	36, Rue Denis Papin 77290, Mitry Mory, France	+33 1 60 21 58 00 +33 1 60 21 57 92 +33 1 64 67 29 36	–
Femax, a.s. The Czech Republic	ul. V Sadech 15/4 16000, Prague 6 – Bubeneč, Czech Republic	+420 224 142 123 +420 224 236 943	paha@femax.cz

