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OMK

page 02 **Pipe Production Catalogue** page 03

OMK Structure

United Metallurgical Company (OMK) is one of the largest Russian producers of pipes, fittings and other metal products for fuel and energy, transport and industrial enterprises.

OMK unites seven large metallurgical enterprises: Vyksa Steel Works (Nizhny Novgorod region), Chusovoy Metallurgical Works (Perm region), Almetyevsk Pipe Plant (Tatarstan), Trubodetal Plant (Chelyabinsk region), the Casting and Rolling Complex (Nizhny Novgorod region), Blagoveshchensk Valve Plant (Bashkortostan) and OMK Tube plant (Texas, USA).

More than 30 thousand employees work at the enterprises of the Company.









ALMETYEVSK PIPE PLANT



BLAGOVESCHENSK VALVES PLANT



CHUSOVOY METALLURGICAL PLANT



OMK-STEEL Casting and rolling complex



OMK TUBE



OMK delivers complete solutions for Oil & Gas and Power Inductries

Products manufactured in pipe and steel rolling mills make part of the following chain: PRODUCTION - DEVELOPMENT - PROCESSING - DISTRIBUTION



1. Casing and tubing pipes

Diameter – 60 to 245 mm Wall thickness — 0.8 to 6.3 mm

4. Pipes for installation of gas-, oil-, water-, and product pipelines and heating systems

Diameter – 114 to 530 mm Wall thickness — 4.0 to 12.7 mm

2. Large diameter pipes

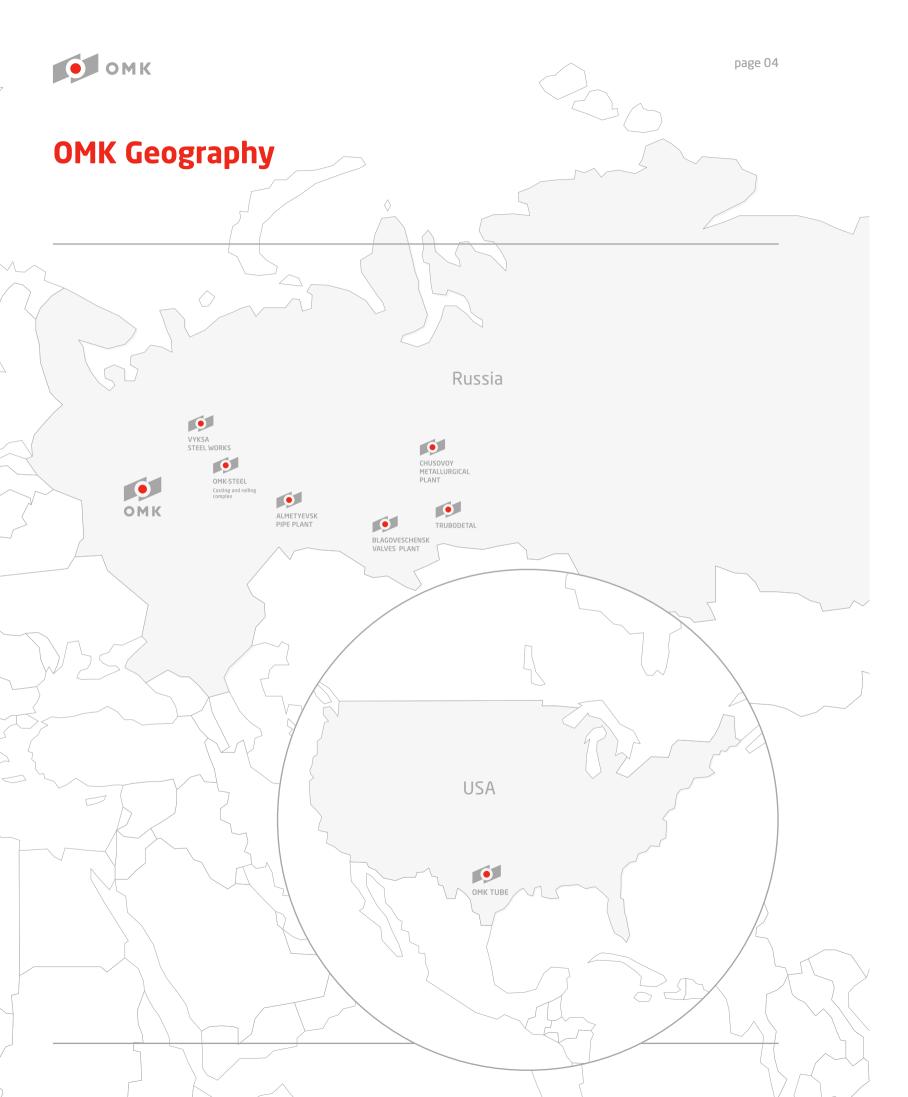
Diameter – 508 to 1422 mm Wall thickness – 8.0 to 50 mm Operating pressure – up to 250 bar

5. Water and gas pipes and conventional pipes

Diameter - 12.7 to 108 mm Wall thickness— 0.8 to 6.3 mm

3. Shaped pipes

Squares – 10×10 to 200×200 mm Rectangulars – 15×10 to 200×160 mm



OMK Pipe and Steel Rolling Mills

Vyksa Steel Works (VSW)

One of the oldest metallurgical centers in Russia was established in 1757. The facility produces steel pipes with diameter starting from 12.7 up to 1422 and wall thickness 1 to 50 mm. Pipes are produced with external anti-corrosive 3-layer polyethylene and polypropylene coating or with one- or two-layer epoxy coating, as well as with internal smooth or corrosion resistant coating.

OMK North America, Inc.

- OMK-Tube (Houston, Texas) production of casing and tubing pipes;
- Tubular Solutions (Houston) pipe-finishing facilities.

The division's plants produce and sell casing and tubing pipes on one of the largest oil extraction markets of North America. Diameter: 60-178 mm. Wall thickness: 4.8-12.7 mm. 200,000 tons of pipes per year is the division's maximum production

Trubodetal Plant

This is one of largest facilities in Russia and CIS, specializing in production of pipeline fittings made of carbon and low-alloyed steel with diameter 57 to 1420 mm. This facility is one of key suppliers for oil and gas utility systems construction as well as for trunk systems.

Blagoveshchensk Valves Plant (BVP)

This plant established in 1756 is one of Russia's largest valves production facilities. The BVP, JSC primary product is pipeline valves made of carbon, low-alloyed and stainless steel grades with nominal diameter 25 to 800 mm and working pressure 16 to 250 kgf/cm².

Hot Rolled Coils Mill (HRC Mill)

HRC Mill produces hot-rolled coils and flat stock with thickness 1 to 12.7 mm and width 30 to 1750 mm.

The mill includes 2 slitting units with the following characteristics:

- Strips with width 30 to 1750 mm.
- Plate with length 1500 to 12200 mm and width 750 to 1800 mm.

Heavy Plate Mill-5000 (Mill 5000)

Heavy plates manufactured at Mill 5000 are designed for production requirements of large diameter pipes used for main oil and gas pipelines. Mill 5000 products can be used in shipbuilding, mechanical engineering, nuclear power industry and other metal-intensive sectors.

OMK major customers include some leading Russian and foreign companies such as: Gazprom, Russian Railways, Lukoil, JSC Transneft, Surgutneftegas, Rosneft, TNK-BP, ExxonMobil, Royal Dutch/Shell, General Electric, Samsung.

OMK exports to over 30 countries worldwide.

Over the recent years OMK supplied piping products for the following projects: South Stream, OML 58 O.U.R. (Obite — Ubeta — Rumuji), the Eastern Siberia — Pacific ocean, Nord Stream, North European Gas Pipeline, Baltic Pipeline System, Vankor Field Pipeline, Central Asia — China, Bovanenkovo — Ukhta, Dzhubga- Lazorevskoye — Sochi, Sakhalin — Khabarovsk — Vladivostok, Ukhta — Torzhok, and others.

Participation in the mentioned major projects is a result of construction of new advanced facilities, complete upgrade of existing capacities and integration of unmatched technologies.



nage 06

Certification

One OMK's priority task is to continuously improve products quality, and to meet customers' requirements and expectations.

OMK plants operate with a quality management system in place which serves as the basis for the global management process and results as a way of achieving performance targets.

VSW's Quality Management System (QMS) is applied to the design and production of electric-welded pipes with plain ends manufactured. Using the submerged arc welding method; electric-welded pipes with plain ends manufactured using HFC welding method; electric-welded pipes with external anticorrosion coating and with internal anticorrosion or anti-friction coating; HFC-welded casing or tubing pipes (with plain ends or with thread and couplings); hot-formed seamless pipes manufactured from round billets; seamless couplings; solid-rolled railway wheels; steel ingots; hot-rolled steel products, and constructed according to the following standards and specifications:

- ISO 9001 (GOST ISO 9001);
- ANSI/ API Q1/ ISO 29001;
- Gazprom company standard 9001
- 97/23/EC Instructions.

The comprehensice management system according to ISO 14001, Environment Management Systems and OHSAS 18001, Occupational Health and Safety Management Systems standards has been in place at the plant since 2009.

Beside QMS certification, VSW applies direct certification of the pipe production. To meet requirements of customers from Russia and near-abroad countries, the Vyksa plant's pipes are certified in accordance with the GOST R system. And VSW offers its product not only on Russian markets, but on international markets as well.

Starting from 1995 Vyksa Plant has American Petroleum Institute (API) certificates with API 5L and API 5CT specifications.

As requested by Polish customers, certification was carried out for steel longitudinal electric-welded pipes with anti-corrosion coating and uncoated pipes with diameters from 114 to 530mm and wall thicknesses from 4.5 up to 10mm of L245NB, L290NB, 415NB, L245MB, L290MB, L360MB, L415MB steel grades, manufactured in accordance with EN 10208-2 with the right to use the W safety sign in marking. The certification was performed by ZETOM Katowice (Poland).

Moreover, Vyksa Steel Works has received a certificate of conformity from TUV Rheinland for electric-welded steel pipes with diameters from 21.3 to 508mm and hollow sections sized 20x20 to 80x80mm and 30x20 to 100x60mm manufactured from construction steel with the strength level from S235 to S355, produced to EN 10219-1:2006 with the right to use the CE marking, starting from March 2011.

These certificates guarantee that the production process is in accordance with applicable standards, technical regulations and specifications.

Pipe Production Catalogue page.

Certificates









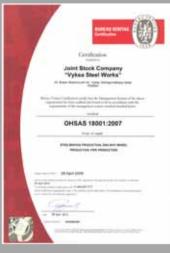






















Contacts

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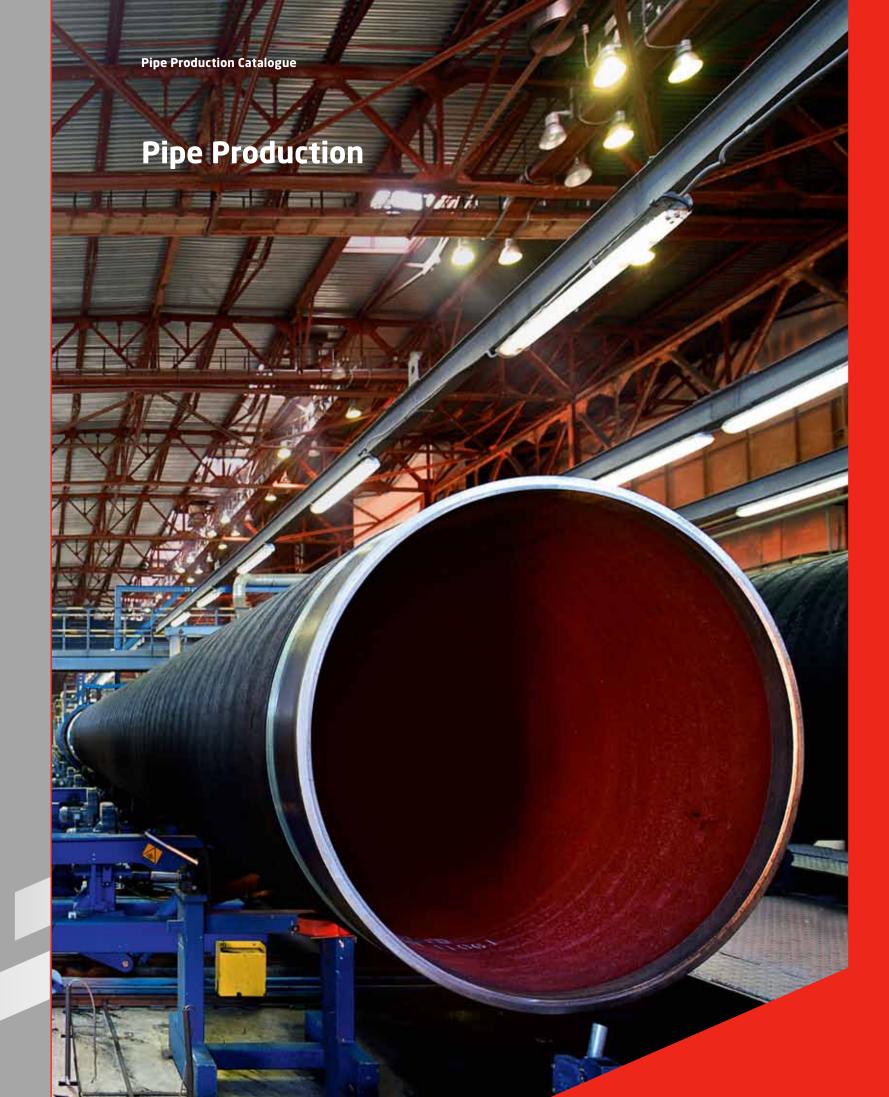
Trubodetal

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Blagoveshchensk Valves Plant

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Pipe Production

OMK manufactures versatile electric-welded pipes with diameters from 12.7 to 1422mm (0.5"-56") and wall thicknesses from 1 to 50mm (0.04"-1.97").

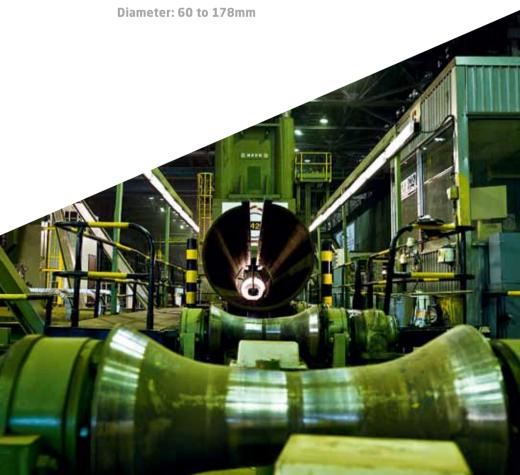
Pipes have two- or threelayer anti-corrosive polyethylene or epoxy coatings. Equipment and production process employed in pipe shops have been designed using advances in pipe welding technology in Russia and worldwide – to meet current requirements.

OMK's piping products are designed to operate at critical temperatures and in aggressive environments. The Company successfully participates in prestigious international tenders. In 2008 OMK was the only Russian supplier of pipes for the first stage of the Nord Stream project and was among the winners of the tender to supply pipes for the Central Asia-China pipeline and OML 58 O.U.R. gas pipeline in Nigeria.

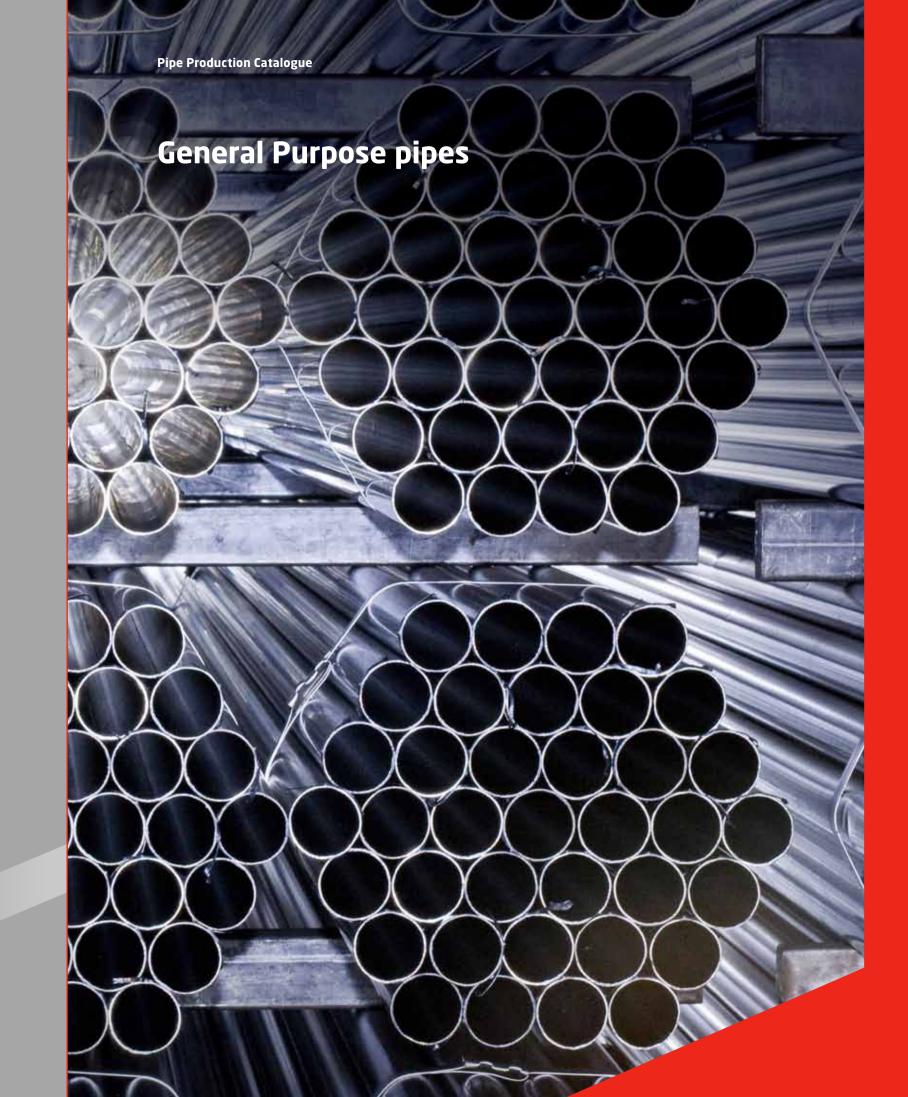




Diameter: 12.7 to 1422mm Dia









 Pipe Production Catalogue
 page 15

General Purpose pipes

Water and gas pipes with small diameters from 12.7to108mm (0,5–10,6") are produced from carbon steel grades S185, S195T, S235JRH, P195TR1, P235TR1 (and other).

Pipes are produced by high-frequency welding with induction current lead.

Pipes are subjected to hydraulic and mechanical tests. Welds undergo non-destructive testing.

Square and rectangular section pipes are shaped from round electric-welded pipes on the line of the electric welding mill.

At the consumer's request pipes are packed in hexagonal and box bundles. Pipe bundles are provided with removable shipping straps for fixing in trans-shipment points and storage without additional pulling appliances.

Product range and scope of application

Standard	Outside	Wall thic	kness, mm	1							
	dia., (mm)	2,0	2,3	2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,4
	13,5	•	•								
	17,2	•	•								
	21,3		•	•		•					
	26,9		•	•		•					
	33,7				•	•		•			
DIN CN 103EE	42,4				•	•		•			
DIN EN 10255	48,3				•	•		•			
	60,3					•	•		•		
	76,1					•	•		•		
	88,9					•		•		•	
	101,6						•				
	114,3						•		•		•

Producing mill: Vyksa Steel Works



page 16 Pipe Production Catalogue page 17

General Purpose pipes

Product range and scope of application

Standart	Outside	Wall thicknes	ss, mm					
	dia., (mm)	2,0	2,5	3,0	4,0	5,0	6,0	6,3
	21,3	•	•	•				
	26,9	•	•	•				
	33,7	•	•	•				
	42,4	•	•	•	•			
DIN EN 10219-1	48,3	•	•	•	•	•		
DIN EN 10219-1	60,3	•	•	•	•	•		•
	76,1	•	•	•	•	•	•	•
	88,9	•	•	•	•	•	•	•
	101,6	•	•	•	•	•	•	•
	114,3		•	•	•	•	•	•

[•] Producing mill: Vyksa Steel Works

Product range and scope of application

Standart	Outside	Wall thicknes	ss, mm					
	dia., (mm)	2,0	2,3	2,6	2,9	3,2	3,6	4,0
	21,3	•	•	•	•			
	26,9	•	•	•	•	•		
	33,7	•	•	•	•	•	•	
	42,4	•	•	•	•	•	•	
	48,3	•	•	•	•	•	•	•
DIN EN 10220, DIN 1615	57	•	•	•	•	•	•	•
	60,3	•	•	•	•	•	•	•
	76,1		•	•	•	•	•	•
	88,9				•	•	•	•
	101,6				•	•	•	•
	108				•	•	•	•

[•] Producing mill: Vyksa Steel Works

General Purpose pipes

Product range and scope of application

Standart	Outside	Wal	l thick	ness,	mm														
	dia., (mm)	0,8	1,0	1,2	1,4	1,6	1,8	2,0		2,6	2,9	3,2	3,6	4,0	4,5	5,0	5,4	5,6	6,3
	12,7	•	•	•	•	•	•	•											
	13,5	•	•	•	•	•	•	•											
	14,0	•	•	•	•	•	•	•											
	16,0	•	•	•	•	•	•	•	•	•									
	17,2	•	•	•	•	•	•	•	•	•									
	19,0	•	•	•	•	•	•	•	•	•									
	20,0	•	•	•	•	•	•	•	•	•									
	21,3	•	•	•	•	•	•	•	•	•	•	•	•						
	22,0	•	•	•	•	•	•	•	•	•	•	•	•	•					
	25,0	•	•	•	•	•	•	•	•	•	•	•	•	•					
	25,4	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
	26,9	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
DIN EN 10217-1	33,7	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
	38,0	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
	42,4	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
	44,5					•	•	•	•	•	•	•	•	•	•				
	48,3					•	•	•	•	•	•	•	•	•	•	•			
	51,0					•	•	•	•	•	•	•	•	•	•	•			
	57,0					•	•	•	•	•	•	•	•	•	•	•			
	60,3					•	•	•	•	•	•	•	•	•	•	•	•	•	
	63,5					•	•	•	•	•	•	•	•	•	•	•	•	•	
	76,1						•	•	•	•	•	•	•	•	•	•	•	•	
	88,9						•	•	•	•	•	•	•	•	•	•	•	•	•
	101,6						•	•	•	•	•	•	•	•	•	•	•	•	•
	108,0						•	•	•	•	•	•	•	•	•	•	•	•	•

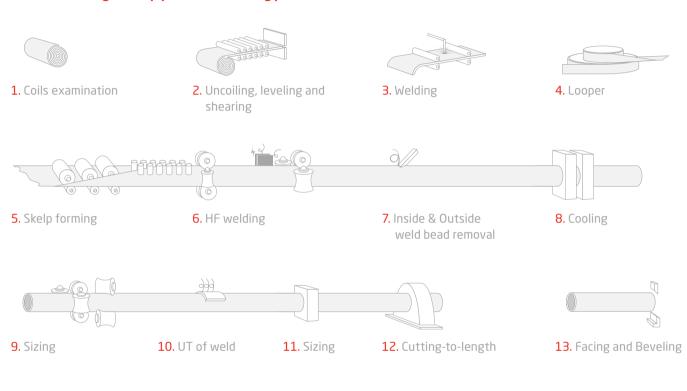
[•] Producing mill: Vyksa Steel Works



14. Hidrostatic test

General Purpose pipes

ERW water and gas line pipes manufacturing process



16. Packaging & storage

15. Final inspection





Hollow Sections

Square and rectangular section shaped pipes are produced by sectioning circular pipes on the electric-welding mill line. Application: building structures for different applications.

page 21

Weld shaped pipes are produced from St 1, St 2, St 3 carbon steel grades, 08, 10 and 20 steel grades, as well as from S235JRH, S355JOH, S355J2H, E155, E190, E195, E220, E235, E260 grades.

Pipes are manufactured at the electric-weld pipe units by high-frequency induction welding.

Product range and scope of application

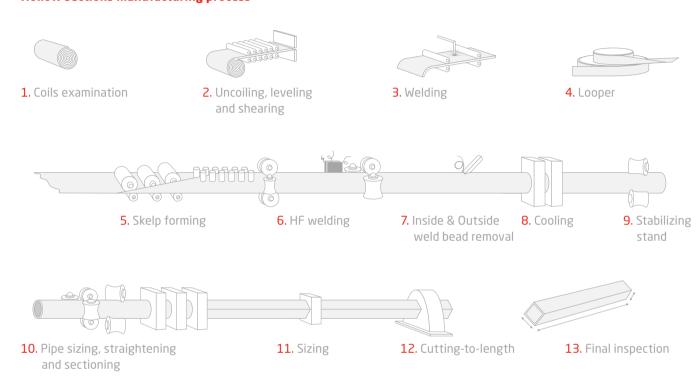
Standard	Outside dia., (mm)	Wall thickness, mm	Steel grade	Scope of application
	20 × 20	1.5-2.0		
	25 × 25	1.5-3.0		
	30 × 20	1.5-2.0		
	30 × 30	1.5-3.0		
	40 × 20	1.5-3.0		
	40 × 25	T'2-2'0		
	40 × 40	1.5-4.0		
	50 × 25	1.5-3.0		
	50 × 30	1,5-4,0		
	50 × 50	2.0-5.0		
	60 × 60	2.0-6.3		
	60 × 30	2.0-4.0	5335IDH 6155	
	60 × 40	2.0-5.0	S235JRH, E155, E195, E220, E235,	
	70 × 50	2.0-3.0	E260	
DIN EN 10219-1-2	70 × 70	2,5-6,3	2200	For construction
DIN EN 10219-1-2	80 × 40	2.0-5.0		of multi-purpose
DIII EII TOOOO-O	80 × 60	2,0-5,0		structures
	80 × 80	3,0-6,3		
	90 × 50	2,0-5,0		
	90 × 90	3,0-6,3		
	100 × 40	2,5-5,0		
	100 × 60	2562		
	100 × 80	- 2,5-6,3		
	100 × 100	3,0-6,3		
	120 × 60	2,5-6,3		
	120 × 80	3,0-6,3		
	160 × 160			
	180 × 140		COEEION	
	180 × 180	4.5-10.0	S355J2H	
	200 × 160		S235JRH	
	200 × 200			

Producing mill: Vyksa Steel Works



Hollow Sections

Hollow sections manufacturing process









Oil and Gas Line Pipes

ERW pipes are made by Vyksa Steel Works. Pipes fully comply with requirements of international standards.

Oil and gas line pipes are made with diameters from 114 to 530mm (4½ - 20") and wall thicknesses from 4.0 to 12.7mm (0.16-0.5").

page 25

Pipes are produced by high-frequency welding from carbon and low-alloy grades: up to X70.

During production pipes undergo multi-stage non-destructive testing, acceptance mechanical tests of base metal and weld and 100% hydraulic pressure test.

All pipes are supplied pre-treated: with local heat treatment of weld or bulk heat treatment.

Pipes undergo multi-stage non-destructive testing using an eddy current flaw detector, automatic and manual ultrasonic flaw detector, mechanical and 100% hydraulic tests.

Product mix and scope of application

Standard	Outside dia., inch (mm)	Wall thickness, mm	Steel grade	Scope of application
	8% (219.1)			
	10¾ (273.0)	4.8–12.7		
ADI C	12¾ (323.9)			Oil O Coo and Mater
API Spec 5L / ISO 3183:2012	14 (355.6)	5.6-12.7	up to X70	Oil & Gas and Water
130 3103.2012	16 (406.4)			transportation
	18 (457.0)	6.3–12.7		
	20 (508.0)			
	8% (219.1)	4.5-12.5		
	10¾ (273.0)	5.0-12.5		
	12¾ (323.9)	J.U-TC.J		For multi-purpose
DIN EN 10219-1(2)	14 (355.6)	5.6-12.5	S235 - S460	structures
	16 (406.4)			Structures
	18 (457.0)	6.3–12.5		
	20 (508.0)			
	8% (219.1)	4.5–12.5		
	10¾ (273.0)	- 5.0 <i>-</i> 12.5		
	12¾ (323.9)	J.U-12.J		
DIN EN 10217-1, 2, 3	14 (355.6)	5.6-12.5	P195 – P460	Multi-purpose
	16 (406.4)			
	18 (457.0)	6.3–12.5		
	20 (508.0)			



Oil and Gas Line Pipes

ERW line pipes manufacturing process













Coils examination

2. Uncoiling, leveling and shearing

3. Strips slitting

5. Looper

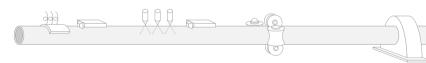




7. Skelp forming



9. Inside & Outside weld bead removal





10. UT of weld 11. Seam-annealing 12. Sizing







14. Marking



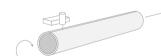
15. Entire heat treatment (upon agreement)



16. Facing and beveling



17. Hidrostatic test



18. AUT of body, weld & ends of pipe



19. Final inspection



20. Packaging & storage





Pipe Production Catalogue page 29

Casings

Electric welded casings are produced by Vyksa Steel Works and fully comply with API 5CT requirements.

Consistent quality of pipes is ensured by optimised production process. Pipes are high-frequency welded with constant current lead.

Pipe quality control is ensured by automatic control of welding, ultrasonic inspection of pipe weld and body, and tracking system.

Electric-welded pipes are supplied with Buttress threads, short (STC) and long (LTC) round threads. To increase tightness of Buttress threads pipes can be supplied with a fluoroplastic sealing ring. Tightness of pipes and threads is tested by means of hydraulic testing of each pipe.

According to Customer's requirements a protective coating can be applied on the external surface of pipes.

Electric-welded pipes made by VSW have the following advantages in comparison with seamless pipes:

- Less out-of-roundness that increases pipe collapse resistance from formation pressure in a well.
- Out-of-roundness tolerance limits by 3 times less than for seamless pipes resulting in increased threshold pressure for pipes in design of casings by 15% and more depending on pipe diameter and wall thickness with enhanced performance.
- High-precision tolerance for wall thickness (± 5% from nominal wall thickness) as compared with seamless pipes (-12.5%, positive tolerance is limited by pipe weight that is equal to + 6.5%).
- Better surface quality preventing defects inherent in seamless pipe rolling.
- Pipe lengths 13 ± 0.2 m (42.64 ft ± 0.66 ft) that improve conditions of casing string fit-up and running.

The Mill is a regular supplier of casing pipes for Exploreco Energy Inc (USA), TNK-BP, Surgutneftegaz, Lukoil, GazpromNeft, Rosneft, KazMunayGas and other oil producers.

The Mill guarantees supply of casing pipes in full conformity with customer's requirements and on time.

Product range and scope of application

Standard	Outside dia., inches (mm)	Nominal linear mass, lb/ft	Wall thickness, mm	Steel grade	Scope of application
	4½ (114.30)	9.50-11.60	5.21-6.35		
	5½ (139.70)	14.00-23.00	6.20-10.54		Casing with "Battress", round
ADI Soca EST	6% (168.28)	20.00-28.00	7.32-10.59	H40, J55, N80, P110,	thread, STC, LTC, tight joints VMZ-1
API Spec 5CT	7 (177.80)	20.00-29.00	6.91-10.36	K55, R95, L80(1)	and threadless casing for oil
	8% (219.08)	24.00-36.00	6.71-10.16		and gas wells fastening
	9% (244.48)	32.30-43.50	7.92-11.05		

Producing mill: Vyksa Steel Works



Casings

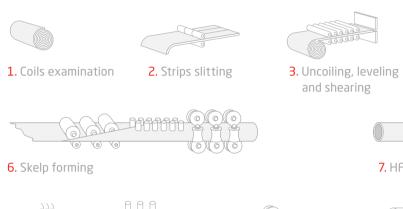
API Spec 5CT

Diam	eter																					
inch		0.208	0.228	0.235	0.248	0.254	0.268	0.276	0.279	0.293	0.309	0.317	0.322	0.358	0.367	0.368	0.401	0.406	0.414	0.422	0.424	0.442
	mm	5.21	5.69	5.87	6.2	6.35	6.71	6.91	6.98	7.32	7.72	7.92	8.05	8.94	9.17	9.19	10.03	10.16	10.36	10.54	10.59	11.05
4½	114.30	9.5 lb/ft	10.5 lb/ft	•	•	11.6 lb/ft																
5½	139.70				14 lb/ft	•	•	•	15.5 lb/ft	•	17 lb/ft	•	•	•	20 lb/ft	•	•	•	•	23 lb/ft		
6%	168.28									20 lb/ft	•	•	•	24 lb/ft	•	•	•	•	•	•	28 lb/ft	
7	177.80			17 lb/ft	•	•	•	20 lb/ft	•	•	•	•	23 lb/ft	•	•	26 lb/ft	•	•	29 lb/ft			
85/8	219.08						24 lb/ft	•	•	•	28 lb/ft	•	•	32 lb/ft	•	•	•	36 lb/ft				
9%	244,48											32.3 lb/ft	•	36 lb/ft	•	•	40 lb/ft	•	•	•	•	43.5 lb/ft

Pipe Production Catalogue page 31

Casings

ERW casing manufacturing process









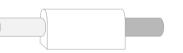








to length





& beveling





14. Straightening











18. Threading









20. Coupling



21. Coupling manufacturing





24. UT of body, weld of pipe

28. Final Inspection

19. MPI of thread,

visual inspection

of geometry



25. Protector 26. Weighing and Screwing-on length measuring



& Stamping

27. Marking



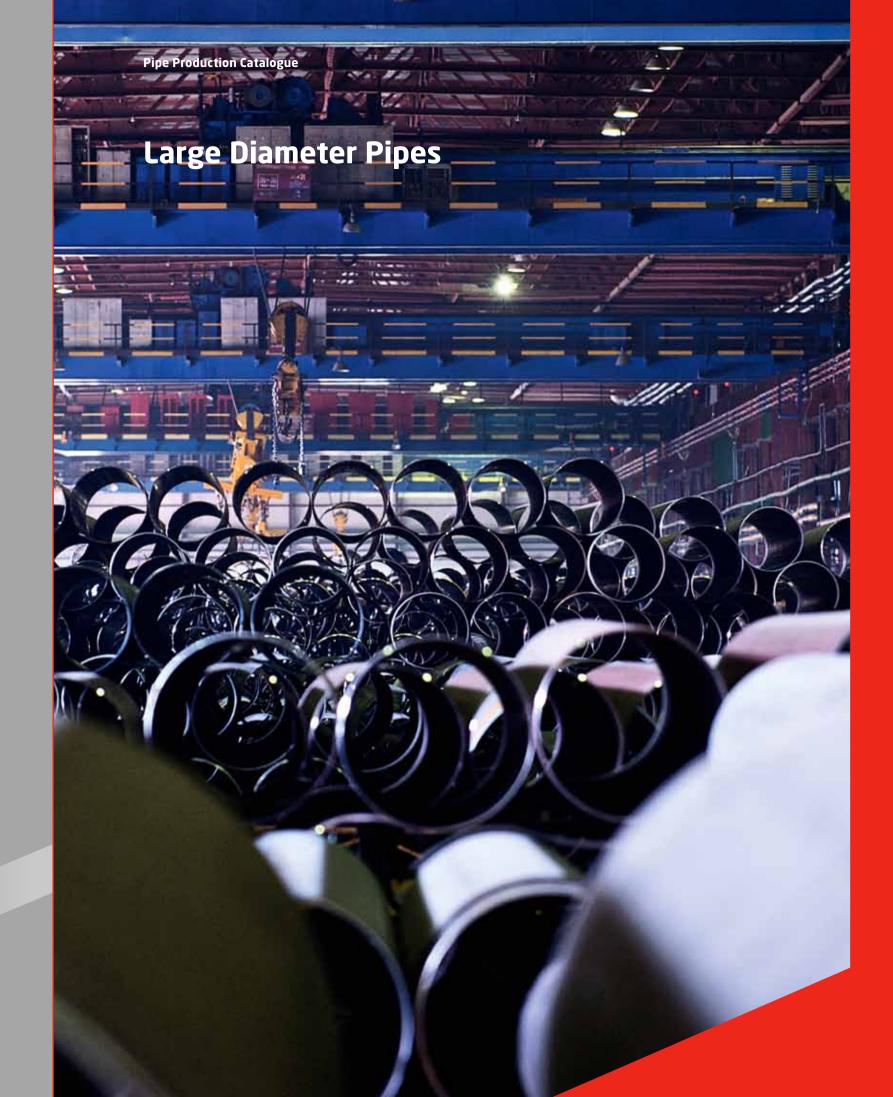




29. Packaging









Pipe Production Catalogue page 35

Large Diameter Pipes

LDPs are manufactured by Vyksa Steel Works, one of the key plants within OMK.

Product range:

- SAWL pipes \varnothing 508 1422 mm (20-56"), wall thickness up to 50 mm (1.97");
- ERW pipes Ø 508 530 mm (20-21").

Standard length of all pipes is from 11.6 to 12.2 m (38 - 40 ft).

At customer's request, VSW will supply pipes with external three- and two-layer anti-corrosive coating and internal flow or anti-corrosive coating. Pipes are certified by American Petroleum Institute according to API Spec 5L (License No. 5L-0276) ISO and according to Shell requirements.

In 2007 a compliance certificate was issued for VSW products according to Det Norske Veritas requirements, DNV-OS-F101 standard for offshore pipeline systems. This allowed OMK to win an international tender for supply of 280 thousand tons of pipes with diameter of 1220 mm (48") and wall thickness 30.9, 34.6 and 41.0 mm (1.2", 1.4", 1.6") in 2008-2009 to construct an offshore section of the Nord Stream gas pipeline on the Baltic Sea bed. Currently VSW has won a tender for supply of 440 thousand tons of pipes with diameter of 813 mm (32") and wall thickness 39 mm for an offshore section of the South Stream Project (1,2 lines) gas pipeline on the Black Sea bed, and has already started deliveries.

Basic Equipment

Pipes are produced on two separate lines using different production methods - UOE Line and JCO Line. Pipes can be made with either one or two longitudinal welds.

UOE Line

Produces pipes with diameter of 508 - 1067 mm (20-42") and wall thickness from 8 to 32 mm (0.28-1.26"), strength grade X80. Design capacity is 1012 thousand tons of pipes per year.

JCO Line

Produces pipes with diameter of 508 - 1422 mm (20-56") and wall thickness from 8 to 48 mm (0.28-1.89"), strength grade up to X100, and working pressure up to 24.7 MPa (250 atm.). Design capacity is 950 thousand tons of pipes per year.

Product range and scope of application

Standard	Outside dia., inches (mm)	Wall thickness, mm	Steel grade	Scope of application
API Spec 5L/ ISO 3183	20" (508) - 56" (1422)	8.0 - 48.0	Strenght class Gr.B - X100 Steel L245 - L555	For construction of gas and oil pipelines, water transportation systems both in oil and gas industry
DNV-OS-F101	20" (508) - 56" (1422)	8.0 - 48.0	Steel L245 - L555	Subsea pipe systems used in the oil and gas sector
DIN 10217	20" (508) - 56" (1422)	8.0 - 40.0	Steel P235 - P265	Multi-purpose pipes
DIN 10219	20" (508) - 56" (1422)	8.0 - 40.0	Steel S235 - S460	Multi-purpose pipes

Producing mill: Vyksa Steel Works



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Large Diameter Pipes

Production of large diameter SAWL pipes

- Longitudinal electric-welded large diameter pipes are manufactured by submerged arc welding (SAW).
- At present large diameter pipes can be manufactured by two independent lines having different pipe forming processes: UOE and ICO.

API Spec 5L, ISO 3183

Diam	eter																														
inch		0.316	0.344	0.375	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.750	0.812	0.875	0.938	1.000	1.062	1.125	1.188	1.250	1.312	1.375	1.438	1.500	1.562	1.653	1.732	1.771	1.811	1.890	1.968
	mm	8.0	8.7	9.5	10.3	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8	33.3	34.9	36.5	38.1	39.7	42.0	44.0	45.0	46.8	48.0	50.0
20	508.0	•	•	•	•	•	•	•	•	•	•	•	•	•																	
22	559.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•																
24	610.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										
26	660.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•										
28	711.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•									
30	762.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
32	813.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
34	864.0		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
36	914.0			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
38	960.0			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
40	1016.0			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
42	1067.0					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					
44	1118.0					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
46	1168.0					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
48	1219.0						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
52	1321.0						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
56	1422.0							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

- UOE and JCO process: pipes are manufactured from B, X42, X46, X52, X56, X60, X65, X70, X80 (API Spec 5L) and L245, L290, L360, L415, L450, L485, L 555 (ISO 3183) grades.
- JCO process: pipes are manufactured from B, X42, X46, X52, X56, X60, X65, X70, X80 (API Spec 5L) and L245, L290, L360, L415, L450, L485, L 555 (ISO 3183) grades.

Large Diameter Pipes

LDP manufacturing process flow (UOE)



6. Edge trimming

11. Pipe marking

16. Outside welding

21. Expansion

of pipe body

1. Plate piling





3. Plate leveling



7. Edges quality control



8. Edge crimping



12. Water flushing



13. Hot drying



17. AUT of weld

22. Inside and outside

on pipe ends

27. Facing

weld bead removal





18. X-Ray TV testing

23. Hidrostatic test

28. MPI of pipe ends



14. Tack welding

4. Plate dimensional examination and UT

9. U-forming



19. MUT, Visual examination & repair



15. Inside welding

10. O-forming









29. Final ispection



30. Marking



26. X-Ray TV testing of

pipe end welds

31. Product storage



Large Diameter Pipes

LDP manufacturing process flow (JCO)





6. Edge crimping



12. Outside welding

11. Inside welding



16. Tab removal



21. AUT of pipe ends

26. Product storage



22. X-Ray TV testing



17. Expansion of pipe body





4. TAB Welding-up



8. Water flushing

13. AUT of weld

18. Inside and outside

weld bead removal on pipe ends



9. Hot drying



14. X-Ray TV testing



19. Facing



23. Facing





24. MPI of pipe ends



5. Edge trimming



10. Tack welding



15. MUT, Visual examination & repair



20. Hidrostatic test



25. Final inspection & marking





Anti-corrosive Pipe Coating

VSW has been producing pipes with external three-and two-layer polyethylene, polypropyl-ene and epoxy anti-corrosion coating since 2000. In 2005 production of pipes with internal flow and anticorrosive coating was started.

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External anti-corrosion coating is designed for corrosion protection of oil and gas pipelines, pipe-lines of compressor, gas distribution and pumping stations. Pipes with external three-layer coating are used for pipeline construction, in transition areas by directional drilling with dragging of pipe strings through wells, during production of cold bends, with pipeline installed in soils with inclu-sions of pebbles, gravel and in rocky soils.

Pipes with external coating produced by the plant are designed for construction of pipelines in different climate and soil conditions with ambient temperature ranging from minus 45°C to plus 60°C for polyethylene coating and from minus 30°C to plus 60°C for polypropylene coating. Temperature of continuous pipe operation is from minus 20°C to plus 80°C for polyethylene coating and from minus 20°C to plus 110°C for polypropylene coating. The minimum service life of the protective coating is 30 years.

Pipes with one- and two-layer epoxy coating are used for construction of oil and gas underground pipelines, water pipelines and utility networks. Pipes with one- and two-layer epoxy coating can be stored from minus 60°C to plus 60°C, transported, constructed and installed - from minus 60° to plus 60°C. Operating range is from minus 60°C to plus 80°C for two-layer coated pipes, and from minus 60° to plus 110°C for one-layer coatings.

Two-layer coating has increased impact and abrasive resistance.

Today external and internal coatings are applied on six process lines with high-tech equipment:

- 3 lines for three and two-layer coatings on pipes with diameter of 508-1422 mm (20-56");
- 1 line for external three- and two-layer coatings on pipes with diameter of 219-1220 mm (8%-48");
- 1 line for external three- and two-layer coatings on pipes with diameter of 219-508 mm (8%-20");
- 1 line for internal flow and anti-corrosive coatings on pipes with diameter of 273-1422 mm (103/4-56").

At the coating areas the following procedures are used according to ISO 14001:

- incoming inspection of pipes and materials used for pipe coating;
- check of parameters of production and secondary processes;
- acceptance and periodic tests of anti-corrosive coatings;
- quality certificate issued for each pipe batch.



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Anti-corrosive Pipe Coating

Technical characteristics of pipe coating

Standard	Pipe diameters, mm	Application, intended use	Allowable temperature for coating long-term service, °C	Allowable pipe storage temperature, °C	Coating structure	Coating thickness
DIN 30670	57 - 1420	Pipeline steel surface corrosion protection. For onshore and offshore pipelines.	Normal performance «N», up to plus 50 °C Special performance «S», up to plus 70 °C	From minus 60 °C up to plus 60 °C	External twolayer/ three-layer polyethylene	1.8-3.0 mm
NFA 49710	219 - 1420	Corrosion protection of onshore pipelines. For fluids transportation.	From minus 20 °C up to plus 70 °C	From minus 60 °C up to plus 60 °C	External threelayer polyethylene	1.2-3.5 mm
CAN/CSA Z 245/21-02	219 - 1420	Corrosion protection of onshore and offshore pipelines. For oil and gas transportation.	From minus 20 °C up to plus 80 °C	From minus 60 °C up to plus 60 °C	External twolayer/ three-layer polyethylene	2.0-3.5 mm
Shell DEP 31.40.30.31-Gen	508 - 1420	Corrosion protection of onshore and offshore pipelines. For oil and gas transportation.	Allowable temperature for coating long-term service determined by selection of coating system.	From minus 60 °C up to plus 60 °C	External threelayer polyethylene or polypropylene	2.5-3.7 mm
DNV RP-106	508-1420	For offshore pipelines	According to Customer's requirements	According to Customer's requirements	External threelayer polyethylene or polypropylene	According to Customer's requirements
DIN 30678	219 - 1420	Pipeline steel surface corrosion protection. For onshore and offshore pipelines.	From minus 20 °C up to plus 100 °C	From minus 20 °C up to plus 60 °C	External threelayer polypropylene	1.8-2.5 mm
NFA 4911	219 - 1420	Corrosion protection of onshore and offshore pipelines. For oil and gas transportation.	From minus 20 °C up to plus 110 °C	From minus 20 °C up to plus 60 °C	External threelayer polypropylene	1.2-2.5 mm
Projects and tenders	219-530	For onshore pipelines	From minus 60 °C up to plus 60 °C	From minus 60 °C up to plus 80 °C	External onelayer/ two-layer flow coating	Up to 1400 microns
API 5L2 (RP5L2)	508 - 1420	Internal flow coating of pipes for noncorrosive gases transportation.	From minus 20 °C up to plus 110 °C	From minus 20 °C up to plus 60 °C	Internal flow coating	At least 50 microns
ISO 15741	508 - 1420	Internal flow coating of onshore and offshore pipes for transportation of non-corrosive gases.	From minus 20 °C up to plus 110 °C	From minus 20 °C up to plus 60 °C	Internal flow, up to plus 110 °C	60-100 microns

Anti-corrosive Pipe Coating

Coating application

6. Precuring/final curing

Anti-corrosive coating application process flow 1. Inspection of 2. Pipe drying 3. Shot blasting of 4. Inspection of external pipe external pipe surface blasting quality surface quality Gas **6.** Chromating **7.** Inductive **8.** Application **9.** Application of **10**. Water cooling **11**. Inspection for of external heating of epoxy adhesive and PE preheating of coated discontinuities of pipes pipe surface powder by side extrusion pipes 13. Acceptance tests, coated pipe marking 12. Coated pipe end stripping Internal coating application process 1. Pipe quality control 2. Internal surface Preheating 4. Internal surface (internal surface) cleaning and washing shot-blasting

7. Quality control / acceptance test / pipe marking



Pipe Production Catalogue **OMK TUBE**



Pipe Production Catalogue page 47

OMK TUBE

OMK has been supplying casing and line pipes to the US market since 2003. In 2011, the company acquired Tubular Solutions, Inc., a processing and finishing facility of OCTG pipe, which has been operating on the market since 2006. Having domestic tubing and casing production facilities will allow OMK to expand its presence in North America.

Constructing and commissioning a new ERW pipe mill was performed in less than 10 months, from March through December 2012. The mill is designed to produce over 200,000 tons per year of oil & gas pipes with OD 2 3/8" - 7" and up to .500" wall thickness. The plant uses advanced equipment by Nakata (Japan).

OMK Tube mill site sits on 75 acres, with an access railroad, and just 3 miles away from our pipe processing facilities. Relative proximity of these production facilities minimizes the lead time from order placement to production of finished pipes.

Starting up this plant, OMK creates opportunity to serve our customers more efficiently: coils supplier - pipe producer - finishing processor - distributors/end-users.

The facilities of "OMK TUBE, inc" include:

OCTG and Line Pipe producing mill

- Mill capacity: 200,000 t/year.
- Products: casings, tubing and line pipes from carbon and low-alloyed steel according to API 5CT, API 5L
- Outside diameter of pipes: min 2%"; max 7"
- Wall thickness: min 0.118"; max 0.500"
- Pipe length: 20′ 65′
- Gas and Induction heat-treat line 2%" 95/8", 4.70 48.00#, 90,000 t/year
- 4 Threading lines 23/6" 95/6"
- 2 Upsetting lines 23%" 41/2"
- Two hydraulic testing units
- Strength grades: J55; K55; N80; L80; L80HC; P110; P110HC; Grade B X70

Quality Management System (QMS) is put in place at all OMK enterprises and serves as the basis. For the global process management. QMS is consistent with:

- ISO 9001:2008,
- API Specification Q1,
- DNV-OS,
- ISO 14001:2004,
- OHSAS 18001:2008.



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OMK TUBE

Product range: OCTG tubing & casing

- Sizes: ranging from 2%" 9%" (2%" 7" OMK Tube manufacturing, 4½" 9%" Vyksa Steel Works)
- Grades: J55, K55, N80, L80, L80HC P110, P110HC
- End Finishes: NUE T&C,EUE T&C, PE, STC, LTC, BTC
- Specifications: API 5CT
- Groups: 1(H, J, K, N), 2(C,L,M,T), 3(P) & 4(Q)
- Product specification Levels: PSL 1, PSL 2
- Casing: 4½ 9%
- Tubing: 2\% 4\%

API 5CT casing and tubing dimensions

Diam- eter, inch	Wall '	Vall Thickness, inch																					
	0,190	0,217	0,224	0,254	0,250	0,264	0,270	0,272	0,275	0,290	0,304	0,317	0,337	0,352	0,361	0,362	0,395	0,408	0,415	0,435	0,453	0,476	0,498
23/8	4.70 lb/ft																						
2%		6.50 lb/ft																					
3½				9.30 lb/ft																			
4½			10.5 lb/ft		11.60 lb/ft		12.75 lb/ft			13.50 lb/ft			15.10 lb/ft										
5½									15.50 lb/ft		17.00 lb/ft				20.00 lb/ft				23.00 lb/ft			26.00 lb/ft	
7								20.00 lb/ft				23.00 lb/ft				26.00 lb/ft		29.00 lb/ft			32.00 lb/ft		35.00 lb/ft
8%						24.00 lb/ft								32.00 lb/ft				36.00 lb/ft					
9%														36.00 lb/ft			40.00 lb/ft			43.50 lb/ft			

[•] Producing mill: OMK Tube - ERW Tubing / • Producing mill: OMK Tube - ERW Casing

Pipe Production Catalogue page 49

OMK TUBE

Product range: Line pipe

- Sizes: Ranging from 2%" 20" (2%" 6%" OMK Tube manufacturing, 8%" 20" Vyksa Steel Works)
- Wall thickness: 0.065" 0.5"
- Grade: B-X80
- Length: DRL & TRL up to 65 ft.

API 5L line pipe dimensions

Pipe Si	Pipe Size		WT in inches Ibs per foot														
nominal pipe size	OD in inches	5s		10s	true 10	20	30	40s & STD	True 40	60	80s & XH	True 80	100	120	140	160	XXH
2	2.375	0.065 1.604	0.065 1.604	0.109 2.638	0.109 2.638		0.125 3.007	0.154 3.653	0.154 3.653		0.218 5.022	0.218 5.022				0.344 7.462	0.436 9.029
21/2	2.875	0.083 2.475	0.083 2.475	0.120 3.531	0.120 3.531		0.188 5.400	0.203 5.793	0.203 5.793		0.276 7.661	0.276 7.661				0.375 10.01	
3	3.5	0.083 3.029	0.083 3.029	0.120 4.332	0.120 4.332		0.188 6.656	0.216 7.576	0.216 7.576		0.300 10.25	0.300 10.25				0.437 14.32	
31/2	4	0.083 3.472	0.083 3.472	0.120 4.970	0.120 4.970		0.188 7.661	0.226 9.109	0.226 9.109		0.318 12.51	0.318 12.51					
4	4.5	0.083 3.915	0.083 3.915	0.120 5.613	0.120 5.613		0.188 8.666	0.237 10.79	0.237 10.79	0.281 12.66	0.337 14.98	0.337 14.98		0.437 19.01			
41/2	5							0.247 12.53			0.355 17.61						
5	5.563	0.109 6.349	0.109 6.349	0.134 7.770	0.134 7.770			0.258 14.62	0.258 14.62		0.375 20.78	0.375 20.78		0.500 27.04			
6	6.625	0.109 7.585	0.109 7.585	0.134 9.289	0.134 9.289			0.280 18.97	0.280 18.97		0.432 28.57	0.432 28.57					
8	8.625	0.109 9.914	0.109 9.914	0.148 13.40	0.148 13.40	0.250 22.36	0.277 24.70	0.322 28.55	0.322 28.55	0.406 35.64	0.500 43.39	0.500 43.39	0.593 50.87	0.718 60.63	0.812 67.76	0.906 74.69	0.875 72.42
10	10.75	0.134 15.19	0.134 15.19	0.165 18.65	0.165 18.65	0.250 28.04	0.307 32.24	0.365 40.48	0.365 40.48	0.500 54.74	0.500 54.74	0.593 64.33	0.718 76.93	0.843 89.2	1.000 104.1	1.125 115.7	1.000 104.1
12	12.75	0.156 21.07	0.165 22.18	0.180 24.20	0.180 24.20	0.250 33.38	0.330 43.77	0.375 49.56	0.406 53.53	0.562 73.16	0.500 65.42	0.687 88.51	0.843 107.2	1.000 125.5	1.125 139.7	1.312 160.3	1.000 125.5
14	14	0.156 23.06		0.188 27.73	0.250 36.71	0.312 45.68	0.375 54.57	0.375 54.57	0.437 63.67	0.593 84.91	0.500 72.09	0.750 106.1	0.937 130.7	1.093 150.7	1.250 170.2	1.406 189.1	1.000 138.8
16	16	0.165 27.90		0.188 31.75	0.250 42.05	0.312 52.36	0.375 62.58	0.375 62.58	0.500 82.77	0.656 107.5	0.500 82.77	0.843 136.5	1.031 164.8	1.218 192.3	1.437 223.5	1.593 245.1	1.000 160.2
18	18	0.165 31.43		0.188 35.76	0.250 47.39	0.312 59.03	0.437 82.09	0.375 70.59	0.562 104.8	0.750 138.2	0.500 93.45	0.937 170.8	1.156 208.0	1.375 244.1	1.562 274.2	1.781 308.5	1.000 181.6
20	20	0.188 39.78		0.218 46.05	0.250 52.73	0.375 78.60	0.500 104.1	0.375 78.60	0.593 122.9	0.812 166.4	0.500 104.1	1.031 208.9	1.281 256.1	1.500 296.4	1.750 341.1	1.968 379.0	1.000 202.9

Producing mill: OMK Tube

[•] Producing mill: Vyksa Steel Works - ERW Surface Casing

Producing mill: Vyksa Steel Works



OMK TUBE

ERW casing manufacturing process flow

















5. Looper







7. HF welding



8. Inside & Outside weld bead removal

19. Coupling

manufacturing



9. UT of weld

10. Seam-annealing **11**. Sizing





10000

12. Cutting to length



13. Entire heat treatment (upon agreement)





16. Pipe body UT

15. Facing & beveling



20. Coupling





24. Weighing and length measuring





25. Marking & Stamping



14. Straightening

17. Threading







26. Final Inspection



18. MPI of thread, visual inspection of geometry



23. Protector Screwing-on



27. Packaging





Fittings

Trubodetal is one of the major producers of pipe fittings from carbon and low-alloyed steel grades with diameter 57 - 1420 mm (2.-56") in Russia and CIS. The plant is one of the key suppliers for oil and gas utility lines construction as well as for trunk systems.

Steel grades: 20, 09Г2С, 20A, 20ФА, 09ГСФ, 09СФА, 08ХМФЧА, 13ХФА, 15ХФА, 15ХМФА, 20ХФА, 10Г2ФБЮ, 10Г2СФБ, 06Г1НМФБД.

Trubodetal's product range:

- elbows bends, short radius bends, forged and welded bends
- T-pieces forged, forged and welded;
- hot induction bends
- reducers and reducing rings;
- caps and bottoms;
- pipeline assemblies;
- stabilizer couplings;
- piping supports;
- manhole hatches, charging chambers;
- nonconventional products;
- corrosion resistant coatings and heat insulation.

The company is a key supplier of components for construction of oil and gas pipelines and utility systems.

The Company is capable of producing up to 60,000 tons of pipe fittings per year.

All Company's products are provided with API, ISO and GOST R certificates, and meet the requirements of ISO 9001, ISO 14001.

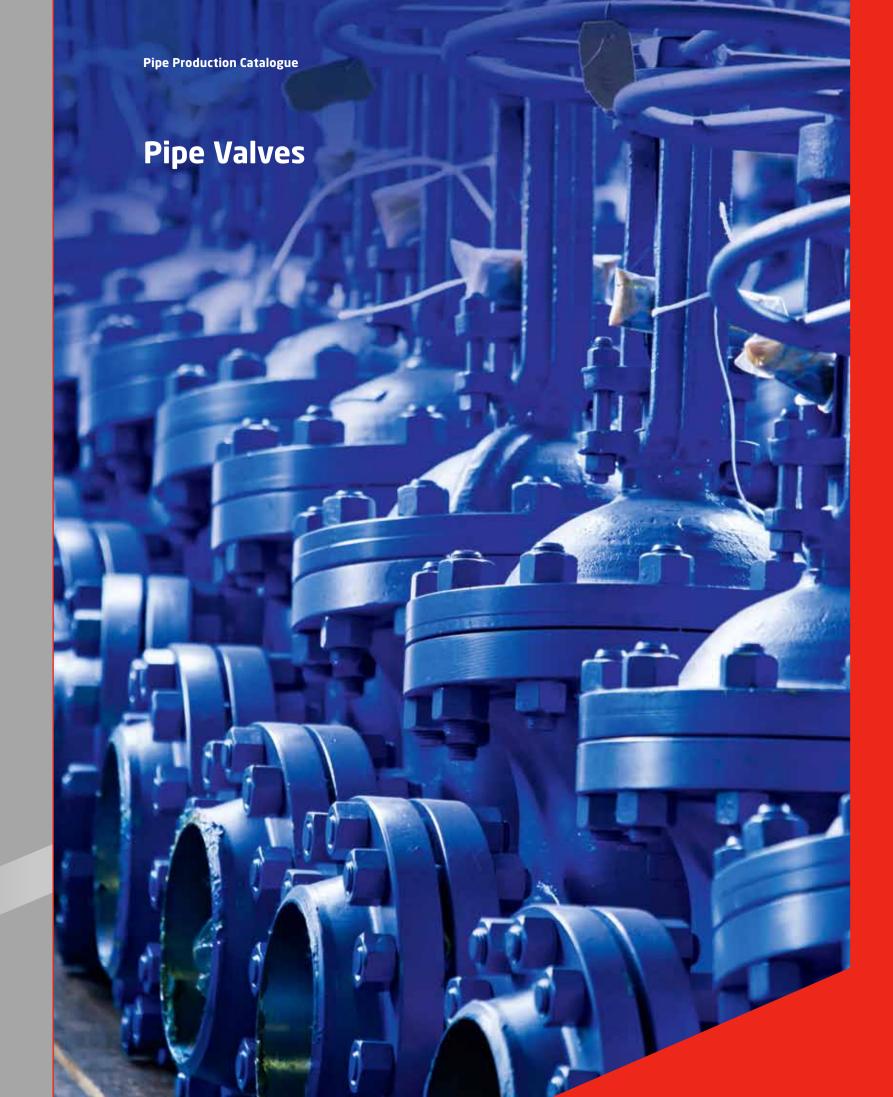














Pipe Valves

Blagoveshchensk Valves Plant is one of the major Russian producer of pipe valves.

The plant produces industrial-grade pipe fittings and uses a complete technological cycle - starting from billets to assembling, testing and quality control of finished products.

BVP's primary product is pipe valves from carbon, low-alloyed and stainless steel grades, with nominal diameter 25 to 800 mm and nominal pressure 16 to 250 kgf/cm².

BVP products:

- cast taper-seat valves;
- spring safety valves;
- change-over valves;
- safety valve units with change-over valves;
- swing check valves;
- TPP fittings;
- API fittings;
- direct-flow gate valves;
- X-tee assemblies;
- ball valves.

BVP's customers include Russian gas and oil producers and oil processing companies: Gazprom, Rosnefy, Lukoil, Bashneft, Surgutneftegas, Transneft, Tatneft and others.

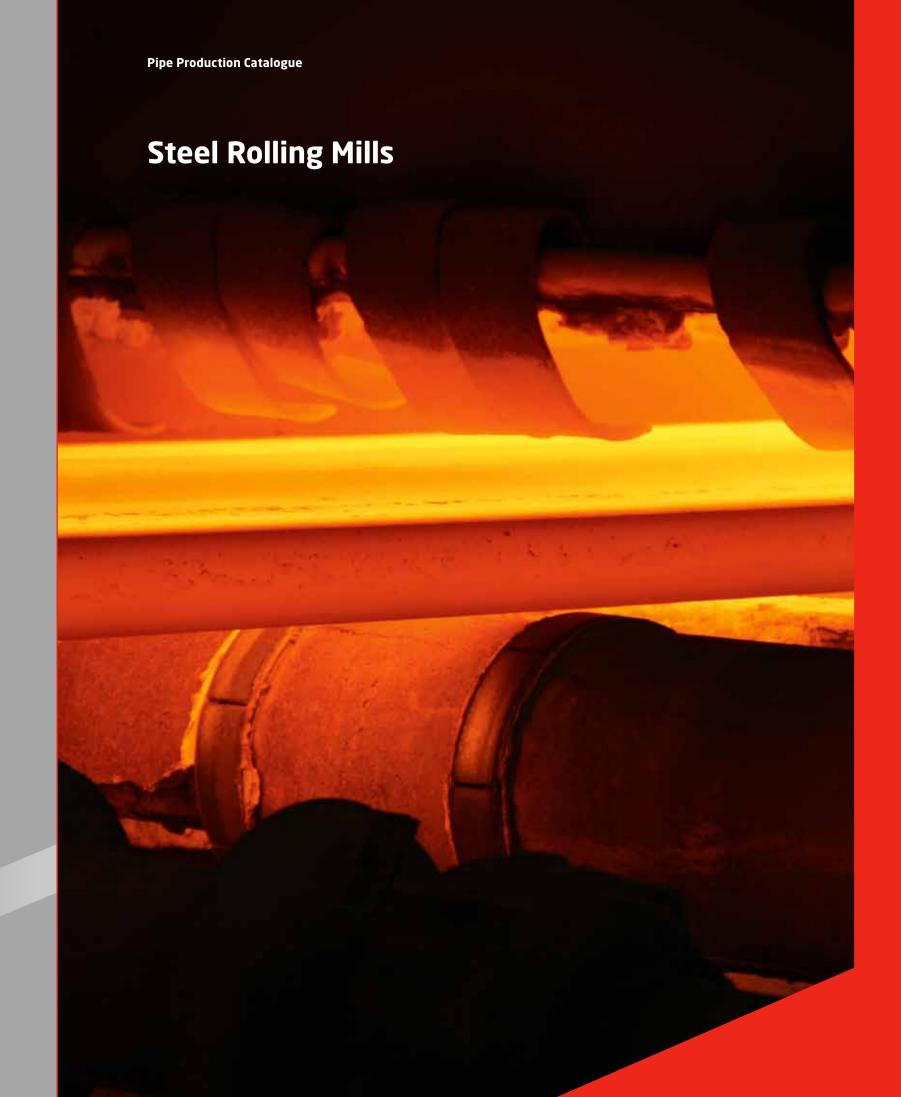
Supplies are made to the bordering countries: Ukraine, Byelorussia, Kazakhstan, Turkmenistan and Uzbekistan.









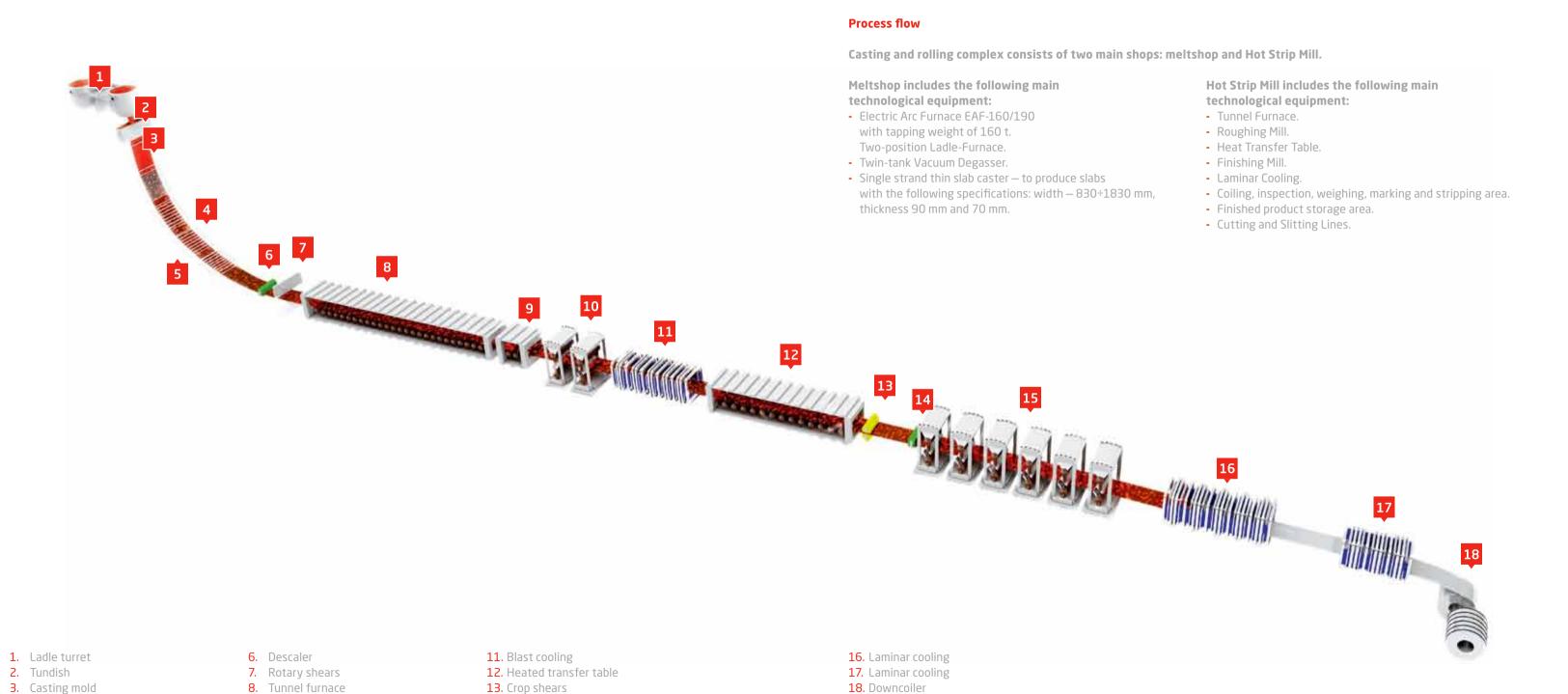




Casting and Rolling Complex

4. Secondary cooling

5. Soft dynamic reduction



14. Descaler

15. Finishing stands

Shuttle section

Roughing stands

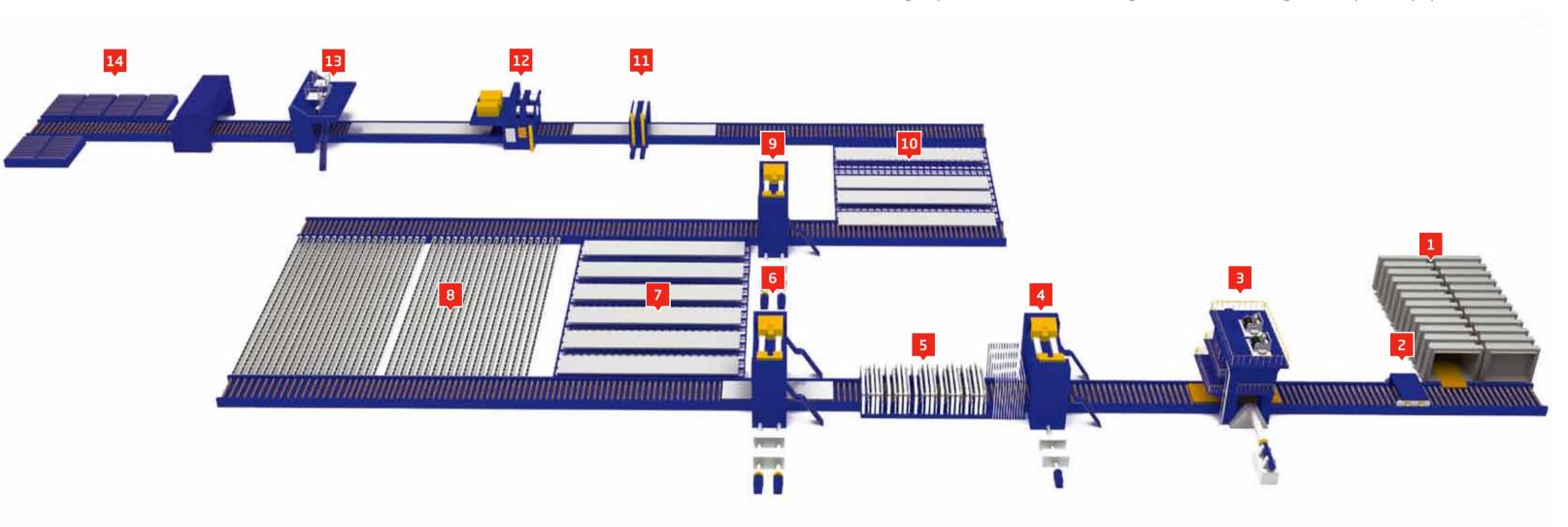
ОМК

Pipe Production Catalogue



Process flow

Basing on the impact made on metal, we chose equipment parameters and operations sequence to receive the finest grain possible as well as to form the targeted structure so that we gain the unique set of properties.



- Reheat furnaces
- Descaler
- 3. Four-high stand (12 000 tons force)
- 4. Preliminary leveling machine

- 5. Accelerated cooling unit with high-pressure and lowpressure sections
- 6. Hot Plate Leveler (4 000 tons force)
- Disc cooling bed

- 8. Retarded cooling section of plates
- 9. Cold Plate Leveler (4 000 tons force)
- 10. Inspection platform with titling cradle 11. Plate ultrasonic control unit
- 12. Double side-trimming shears and slitting shears
- 13. Dividing shears
 - 14. Pull-over gear





Heavy Plate Mill-5000





