



DNEPROVSKY SPECIAL TUBES PLANT LLC



AREAS OF PRODUCT APPLICATION



DNEPROVSKY SPECIAL TUBES PLANT LLC



About us

Dneprovsky Special Tubes Plant LLC is the manufacturer and supplier of the seamless warm- and cold-finished tubes (including capillary tubes, thin-walled and extremely thin-walled tubes) of stainless steels, scale-resistant and heat-resistant steels and alloys, titanium, nickel and their alloys, refractory metals, aluminum and its alloys as well as nonferrous metals.

The Plant, built in 2003, is a modern enterprise that produces annually about 200.000 meters of special tubes of different grades in a diameter range from 0.22 up to 159.0 mm and wall thickness from 0.05 up to 9.0 mm. The Plant mastered tubes production of refractory metals and their alloys (molybdenum, niobium, tantalum, tungsten). Nowadays the present production is the only one on the territory of the CIS countries.

Manufacturing of the other types of products has been mastered:

- short-radius seamless elbows (Rmed = 0.7...1.0 Doutside) in a diameter range from 18.0 up to 95.0 mm meeting requirements of special specifications as per TU U 24.2-33338597-006:2017;
- shaped tubes of diameters of the circumscribing circles from 4.0 up to 76.0 mm of different types of section;
- plane-oval radiator tubes;
- wire (including spring high-tensile wire) of stainless and alloy steels as well as wire of pure nickel and aluminum alloys;
- power unit equipment gasket billets of NP2 nickel grade.



The system of quality management corresponding to the requirements of the international ISO 9001:2015 standard and the requirements of the aerospace industry AS/EN 9100:2018 standard was developed and operates at the enterprise. This confirmation allowed the International Group of Quality in the Aerospace Industries (IAQG) to include our plant in the World Information Industry Online Supplier System for this industry (IAQG - OASIS), which extends our tube supply capabilities to a qualified supplier.

The Plant applies a customer-oriented approach in its professional activity. The key benefits of the Plant are such as flexible pricing policy, optimal terms of production and delivery, stable high-quality products and updated logistics facilities.



Dneprovsky Special Tubes Plant comprises:

Tube shop:

- cold and warm working section;
- refractory metal tube production section;
- tube, rod and wire chemical treatment section;
- tube outer and inner surface electrochemical treatment section;
- tube, rod and wire heat-treatment section;
- short-radius elbow production section;
- tube finishing section;
- shaped and plane-oval radiator tubes production section;
- oiled wire manufacturing section.

Equipment of the tube shop includes:

- cold and warm rolling mills: KhPTS-40, KhPT-32, KhPT-55, KhPT-90;
- tube rolling: 2KhPTR 6-15, KhPTR 8-15, KhPTR 15-30, KhPTR 30-60;
- pipe section mill, drawing benches of sink, fixed plug and bar drawing, rotary swaggers from \varnothing 3.0 up to 76.0 mm, centerless grinding machines of VSh-500 model;
- electrocontact resistance heating furnaces (max 12500°C), shaft heating furnaces in a protective vacuum 10-5 and argon (up to 1050°C) environment, shaft vacuum furnace PSh \varnothing 1000 mm (up to 900°C), SRO furnace with protective argon (up to 1080°C) environment, vacuum furnaces (up to 1500°C);
- Kieserling VRM straightening machine for tubes of \varnothing 0.2-80.0 mm, etc.

Machine workshop:

- machining area: screw-cutting lathes, milling machines, planer, face-grinding, drilling machines;
- deep boring area: drilling-and-boring machines (mod. RT 601.24 and mod. RT 604);
- rolling tool preparation area: L3-250 machine for grinding of cold rolling mill calibres and cylindrical grinding machine for mandrel grinding.

Quality control department:

- OD visual inspection, ID periscope inspection, dimension inspection;
- ultrasonic and eddy-current inspection;
- spectral analysis of metal;
- capillary inspection.

Certified and accredited testing laboratory:

- mechanical testing;
- technological testi
- metallographic testing;
- corrosion testing;
- linear and angular measuring;
- spectral chemical analysis.

Water treatment and following chemical water treatment and neutralization section:

- water treatment station;
- recycling water station;
- neutralization station.

Stock and finished products warehouse

All products of DSTP LLC are manufactured using certified billet produced by major manufacturers in Ukraine, the CIS and EU countries.



Production of tubes of refractory metal based alloys

Dneprovsky Special Tubes Plant LLC is the only one in Ukraine and the CIS countries, specializing in production and supplying of tubes of refractory metals and alloys on their base such as molybdenum, tungsten, tantalum and niobium.

Technical requirements for tubes of refractory metals and their alloys correspond with specifications, agreed by customer and plant as well as technical specifications TU U 24.4- 33338597-005:2017 “Seamless Small-sized and Thin-walled Tubes of Molybdenum and Niobium Alloys”, which are the intellectual property of DSTP LLC.

Application area of molybdenum tubes and Mo-based alloys:

Nuclear industry:

- Thermocouple protection tubes for temperature measuring up to 1600 °C. For example, tubes of pure molybdenum (99.9% Mo) with size range \varnothing 2.0-6.5 mm x 0.15-1.0 mm are used for temperature measuring in sublimation process of high-density metals enrichment;
- \varnothing 2.0-6.5 mm x 0.15-1.0 mm are used for temperature measuring in sublimation process of high-density metals enrichment;
- Gas outlet and gas-carrier tubes of sublimation systems and centrifugal machines for high-density metals enrichment. For example, tubes of pure molybdenum (99.9% Mo) with size range \varnothing 8.0-10.0 mm x 0.5-1.0 mm.

Nuclear power engineering:

- Gas outlet tubes of heat-producing element of nuclear power units. The tubes are used for gas disposal (argon, krypton, neon, hydrogen) from heat-producing elements of fuel assemblies of nuclear power unit reacting cores, including operations with helium cooling (tubes of pure molybdenum (99.9% Mo) with size \varnothing 2.0 x 0.15 mm).

Radar systems:

- Cathodes of super high-frequency vacuum equipment - satellite-Earth links, guidance systems of rocket-and-space technical equipment. Super high-frequency vacuum emitters of radar systems, e.g. ground radars, mobile radars, aircraft radar, communication systems with space crafts (satellites) (tubes of pure molybdenum (99.9% Mo) with size range \varnothing 0.8-9.0 mm x 0.07-1.0 mm).

Rocket production:

- Tube line systems for oxidant delivery to combustion chambers of rocket main engines and satellite precision control engines. For example, tubes of pure molybdenum (99.9% Mo) with size range \varnothing 3.0-10.0 mm x 0.3-1.0 mm.

Metallurgy:

- Thermocouple protection tubes for temperature measuring up to 1600 °C. Thermocouple protection tubes are also used for temperature control of melting metallurgical equipment, e.g. in blast furnaces.





Main consumers of tubes:



A.M. Makarov Yuzhny Machine-Building Works Production Association SE (YuMZ)



Motor Sich JSC



The State Enterprise "National Nuclear Energy Generating Company "Energoatom"



"Zorya-Mashproekt", Scientific-and-Production Complex State Enterprise



Hindustan Aeronautics Limited



"FED" JSC



ANTONOV Company State Enterprise



"The Malyshev Plant" State Enterprise

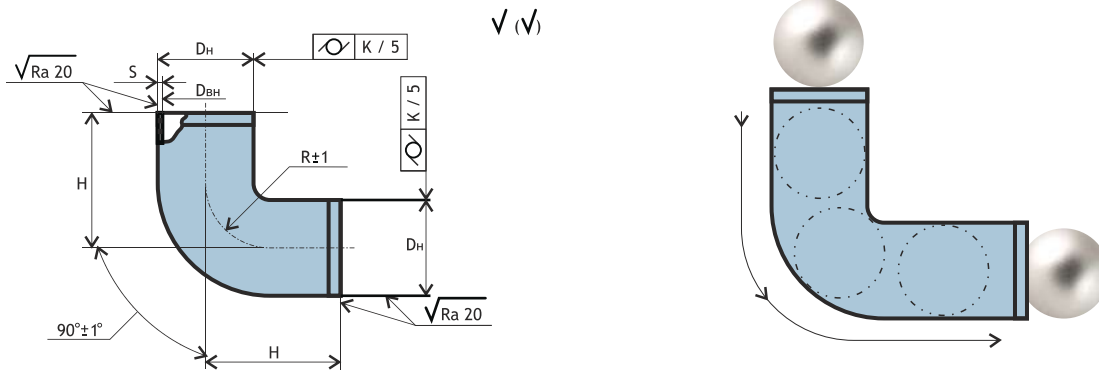


SE "Lutsk Repair Plant "Motor"

Production of short-radius seamless elbows

Dneprovsky Special Tubes Plant LLC developed and mastered the unique technology of production of turbine short-radius seamless elbows ($R_{med}=0.7...1.0D_{outside}$) of stainless steel and alloy grades, titanium and its alloys with dimensions from $\varnothing 18.0 \times 1.2$ mm up to $\varnothing 95.0 \times 3.5$ mm according to TU U No. 24.2- 33338597- 006:2017 requirements:

Delivery of elbows of other sizes and bend radius (within $R_{med}=0.7...1.0D_{outside}$) is possible by taking into account technical requirements, agreed upon with the customer. In addition, the plant manufactures the whole range of elbows (bends) 90° and 45° for aircraft engines.



Size Range	No	Outside diameter, mm	Wall thickness, mm	Radius, mm	H, mm	K, mm	Crimp height, mm	Corrugation pitch, mm
	1	16±0.1	0.8	16.0	32±0.5	0.2	0.2	9.2
	2	16±0.1	1.0	16.0	32±0.5	0.2	0.2	9.2
	3	18±0.1	1.2	18.0	27±0.2	0.2	0.2	9.6
	4	22±0.15	1.4	22.0	35±0.3	0.25	0.4	12.0
	5	28±0.15	1.8	28.0	38±0.3	0.25	0.4	18
	6	32±0.2	1.8	32.0	40±0.3	0.3	0.4	18
	7	38±0.2	1.8	38.0	43±0.3	0.3	0.6	21.6
	8	42±0.2	2.0	42.0	50±0.3	0.3	0.6	21.6
	9	48±0.2	1.8	48.0	58±0.3	0.3	0.6	21.6
	10	53±0.23	1.8	53.0	60±0.3	0.4	0.6	21.6
	11	53±0.23	3.0	41.5	60±0.3	0.4	0.6	36.0
	12	63±0.23	1.8	46.5	65±0.3	0.4	0.6	21.6
	13	75±0.23	2.0	52.5	71±0.3	0.4	0.6	24.0
	14	83±0.27	3.0	71.5	90±0.3	0.4	0.6	36.0
15	95±0.27	3.0	77.5	95±0.3	0.4	0.6	36.0	

Turbine elbows

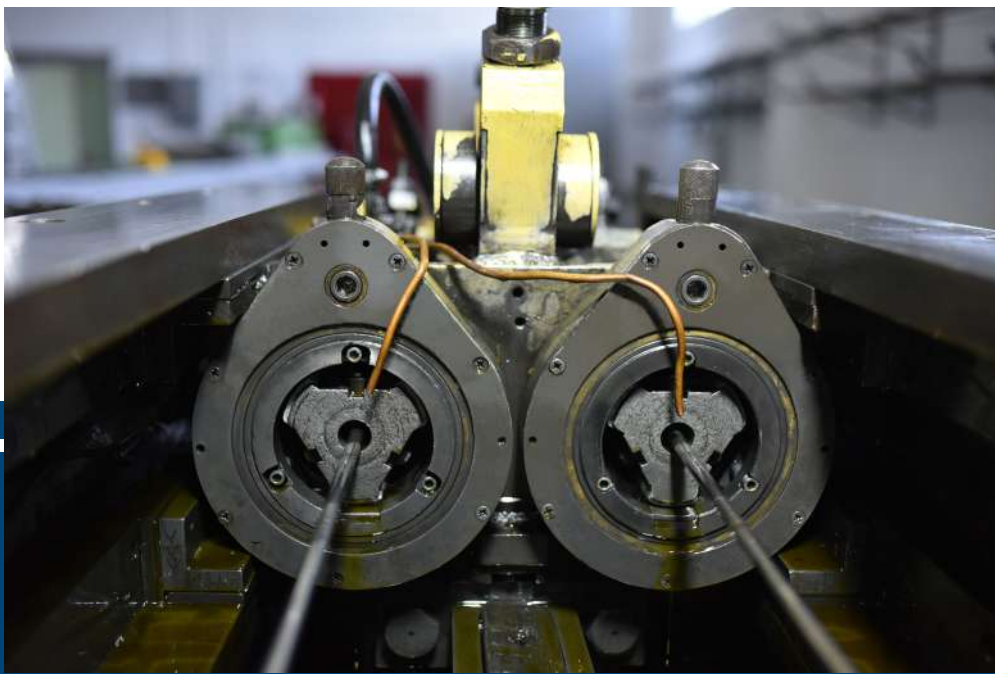


GRADES AND STANDARDS

Titanium alloy seamless tube and pipe	Material	UNS	No	W.N.	ASTM B/ASME SB	DIN/EN	AMS
	Gr.1	R50250	Ti1	3.7025	338, 861,348	17861, Vd TUV WB 230/2	
	Gr.2	R50400	Ti2	3.7035	338, 861, 348	17861, Vd TUV WB 230/2	4942
	Gr.3	R50550	Ti3	3.7055	338, 861, 348	17861, Vd TUV WB 230/2	
	Gr.5	R56400	Ti6Al4V	3.7165	861, 348		
	Gr.5ELI(Gr.23)	R56401	Ti6Al4VELI	3.7165	F136ELI		
	Gr.7	R52400	Ti2Pd	3.7235	338, 861, 348	17861, Vd TUV WB 230/2	
	Gr.9	R56320	Ti3Al2.5V	3.7195	338, 861, 348	17861	4943,4944,4945 4946, AS5620
	Gr.11	R52250	Ti1Pd	3.7225	338, 861, 348		
	Gr.12	R53400	TiNi0.8Mo0.3	3.7105	338, 861, 348		

Nickel alloy seamless tube and pipe	Material	UNS	No	W.N.	ASTM B/ASME SB	DIN/EN	AMS
	ALLOY 200	N02200	Ni99,2	2.4066	163, 161		
	ALLOY 201	N02201	LC_Ni99	2.4068	163, 161		
	ALLOY C22	N06022	NiCr21Mo14W	2.4602	622		
	ALLOY C276	N10276	NiCr16Mo15W	2.4819	622		
	ALLOY 59	N06059	NiCr23Mo16Al	2.4605	622		
	ALLOY 600	N06600	NiCr15Fe	2.4816	163, 167	17751	
	ALLOY 601	N06601	NiCr23Fe	2.4851	163, 167	17751	
	ALLOY 625	N06625	NiCr22Mo9Nb	2.4856	444, 829	17751	5581 Type 1
	ALLOY 718	N07718	NiCr19NbMo	2.4668	444	17751	5589
	ALLOY 800	N08800	X10NiCrAlTi33-20	1.4876	163, 407	17459	
	ALLOY 800H	N08810	X5NiCrAlTi31-20	1.4958	163, 407	17459	
ALLOY 825	N08825	NiCr21Mo	2.4858	163, 423	17751		

Nickel alloy seamless tube and pipe	Material	UNS	No	W.N.	ASTM B/ASME SB	DIN/EN	AMS
	Tp304	S30400	X5CrNi18-10	1.4301	213, 269,312	10216-5	5560, 5567 Type1
	TP304H	S30409	X6CrNi18-10	1.4948	213, 269,312	10216-5	
	TP304L	S30403	X2CrNi19-11,X2CrNi18-9	1.4306,1.4307	213, 269,312	10216-5	
	TP304LN	S30453	X2CrNi18-10	1.4311	213, 269,312	10216-5	
	TP310S	S31008	X12CrNi25-21	1.4845	213, 269,312		
	Tp316	S31600	X5CrNiMo17-12-2	1.4401	213, 269,312	10216-5	5573
	TP316H	S31609	X6CrNiMo17-13	1.4919	213, 269,312	10216-5	
	TP316L	S31603	X2CrNiMo17-12-2	1.4404	213, 269,312	10216-5	
	TP316LN	S31653	X2CrNiMo17-11-2	1.4406	213, 269,312		
	TP316Ti	S31635	X6CrNiMoTi17-12-2	1.4571	213, 269,312	10216-5	
	Tp317	S31700	X5CrNiMo17-13-3	1.4449	213, 269,312	10216-5	
	Tp321	S32100	X6CrNiTi18-10	1.4541	213, 269,312	10216-5	5557, 5570 Type1
	TP321H	S32109	X6CrNiTi18-10	1.4941	213, 269,312	10216-5	
	Tp347	S34700	X6CrNiNb18-10	1.4550	213, 269,312	10216-5	5571
	TP904L	N08904	X1NiCrMoCuN25-20-5	1.4539	213, 269,312	10216-5	
	ALLOY 254	S31254	X1CrNiMoCuN20-18-7	1.4547	213, 269,312	10216-5	
	Duplex F51/F60	S31803/ S32205	X2CrNiMoN22-5-3	1.4462	789, 790	10216-5	
Superduplex F53	S32750	X2CrNiMoN25-7-4	1.4410	789, 790	10216-5		





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