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## Steelworks

Our products are made of steel in a wide range of types and are used in many industries such as the following: automotive, metallurgy, mining, railway, aviation, electrical machinery industry and other heavy machinery.

### THE RANGE OF STEEL TYPES PRODUCED IN THE COMPANY INCLUDE:

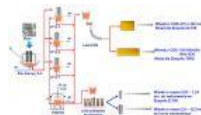
- Carburizing steels (e.g. 16MnCr5, 16MnCrS5, 20MnCr5, 20MnCrS5, 18CrMo4, 15NiCr13, 18CrNiMo7-6, 17CrNi6-6, 18CrMo4; C10E, C10R, C15E, C15R)
- Quenched and tempered (e.g. C35, C35E, C35R, C45E, C45, C40E, C45R, C55E, C55R, C50E, C55, C60E, C60R, C60, 28Mn6; 37Cr4, 37CrS4, 41Cr4, 41CrS4, 25CrMo4, 25CrMoS4, 34CrMo4, 34CrMoS4, 42CrMo4, 42CrMoS4, 50CrMo4, 34CrNiMo6, 30CrNiMo8, 51CrV4)
- With boron micro-alloy (e.g. 20MnB5, 30MnB5, 38MnB5, 27MnCrB5-2, 15B28H, 15B30H, 15B37H), vanadium (e.g. 21CrMoV5-7, 14MoV6-3, 30MnVS6), titanium, nitrogen, niobium.

These steels can be produced with an increased and controlled sulphur content to guarantee high machinability.

- Nitriding steels (e.g. 31CrMoV9, 41CrAlMo7-10)
- Free cutting steels (e.g. 10S20, 35S20, 46S20)
- Corrosion resistant steels including:
  - austenitic Cr- Ni, Cr- Ni- Ti, Cr- Ni- Mo- Ti, Cr- Ni- Si (e.g. X5CrNi18-10, X6CrNiTi18-10, X6CrNiMoTi17-12-2)
  - ferritic (stainless and heat-resistant) with a chromium content of 25% and with additions of titanium or aluminum and silicon (e.g. X10CrAl7, X10CrAlSi7, X10CrAl13, X10CrAl18, X10CrAlSi18, X10CrAl24, X10CrAl24, X6Cr13, X12Cr13, X20Cr13, X30Cr13, X39Cr13, X6CrNiTi18, X5CrNi18-10)
- carbon tool steels (e.g. N9E [~1.1830; ~1.1625]) and alloy steels for cold work (e.g. 90MnCrV8, NC6 [~1.2063], NCV1 [~1.2235]) and elevated temperatures (e.g. WCL [~1.2343], WNL [~1.2713])
- bearing steels (e.g. 100Cr6)
- spring steels (e.g. 51CrV4, 60SiCr7)
- armour plate steel (e.g. ARMSTAL 500 [30PM], ARMSTAL 450 [PM450], ARMSTAL 550, 2P, 43PSM) and for the production of artillery equipment (e.g. 32CrMoV12-10, S60, 45H1)
- abrasion resistant steels (HARDSTAL 350 to 500, Hadfield steel – X120Mn12)

Our steels are characterized by a low level of non-metallic inclusions and low content of oxygen and hydrogen, used for the manufacture of abrasion-resistant, especially loadbearing elements.

### Scheme Steelworks



### STEELWORKS EQUIPMENT:

#### MELTING DIVISION

*Electric arc furnace* – equipped with transformer of 20MVA in capacity + 3 oxygen-gas burners, DPP system, eccentric bottom tapping (EBT), average heat weight 42 Mg, tap to tap 70 min.

*Secondary metallurgy treatment:*

- ladle furnaces: 3
- VD/ VOD device – used for vacuum degassing steel (VD process) and for stainless steel production (VOD process)

#### CASTING DIVISION

*CC LINE*- two strands system (for billets of dimension 270x320mm) and one strand for slabs of dimensions (130 and 180)x800, 190x1030, mold of arched type, caster radius of 10,5m, device is equipped with electromagnetic stirrer (EMS). Ceramic submerged system is used for stream protection.

*Pouring into mold ingots:*

- for rolling – 0.9 to 1.2 ton weight

- for open die forging – 2.0 do 15 ton weight

**CONDITIONING DIVISION**

Grinding machine for ingots, billets and slabs grinding.