



UPETROM - 1MAI

Oilfield Equipment

member of UPETROM GROUP

# The Casting and Forging Factory

## The Steel and Cast Iron Foundry

The SMELTING Module

The smelting aggregata and laboratory and control apparata permit a large range of steel and cast iron brands to be produced

The VODC type system was purchased in 1995 from the ALD Vacuum technologied GmbH. Treating the liquid steel is performed into a conevrter blasting oxygen and refining under vacuum and 0.7 mbar pressure conditions. Argon barbotage applied simulatneously.

### VODC - Type System

Technological Possible Procedures of the VOD - System

- (VD) degassing under vacuum conditions and argon barbotage
- (VD) steels of average carbon content
- (VOD) carbon oxidation by oxygen blasting
- (VOD) degassing under vacuum conditions and argon barbotage
- (VOD) steels of low carbon content

### Advantage

- high degree of gas content reduction (H<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub>)
- elemination of impurities
- content less than 0.01 % of S
- low carbon content steel smelting
- high degree of chromium recovery for high alloy steel

### Used technologies

- Electric - arc furnace
- Electric furnace + argon barbotage
- Electric furnace + VODC + VD
- Electric furnace + + graphite blasting
- Induction furnace
- Electric arc furnace + induction furnace

### Steel for Casting

- Unalloyed steels : according to : SR ISO 3755, STAS 600, ASTM A 216 - WCA, WCB, WCC ASTM A 352 - LCA, LCB, LCC - API 600
- Light alloy steel and alloy steel : according to : SR ISO 9477, STAS 1779, ASTM A 487 requirements; 45k, 60K, 75k type steel
- API Spec 6Al; firm standards
- Stainless steels according to the ASTM A 217 requirements ; CA15; C5; WC6; WC9 used for parts working under environmental conditions containing high H<sub>2</sub>S and CO<sub>2</sub> concentration values
- Refractory steels : for transport gratings and other components utilized under high temperature conditions
- Manganous steels (Hadfield) 12 - 14 % Mn : wear resistant parts

### Steels for Forging Ingots

Polygonal ingots of 2t to 10t cast directly or cast in syphon argon - splashed or vacuum treated steel; the steel brands cover the range of all carbon steels to the high alloy ones

### Cast Iron Castings

- grey cast iron and grey cast iron of high resistance
- phosphorous alloyed grey cast iron for railway waggons
- chromium - alloyed refractory cast iron
- nodukar cast iron - SR EN 1563; firm standards

Smelting Module Equipment	Alloy	Control and Laboratory Equipment
electric - arc furnaces -capacity : 3t, 5t, 8t	steel, cast iron	- electronic balances afferent to the rolling platforms used for casting - Electro - Nite immersion thermocouples
graphite blasting system afferent to the electric furnaces	cast iron	X-ray fluorecence spectrometer to analyse the chemical composition
casting ladles for argon barbotage through porous plug	steel	- LECO analyser to determine the H <sub>2</sub> content - LECO analyser to determine the % of C and S
VODC - type system (vacuun oxigen decarburization converter) capacity 8t to 12t	steel	- Physical and mechanical test laboratory - LECO analyser to determine teh O <sub>2</sub> and N <sub>2</sub> content