

STAINLESS STEEL AND HIGH NICKEL ALLOYS TUBULAR SOLUTIONS



A photograph of an industrial facility, likely a refinery or chemical plant, at sunset. The sky is a mix of blue and orange. In the foreground, there are large, vertical industrial towers and a complex network of pipes and structural steel. Some parts of the facility are illuminated by warm lights, creating a glowing effect against the twilight sky.

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TUBACEX: GLOBAL SOLUTIONS PROVIDER

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A Global Leader in Seamless Stainless and High Nickel Alloys Pipes and Tubes

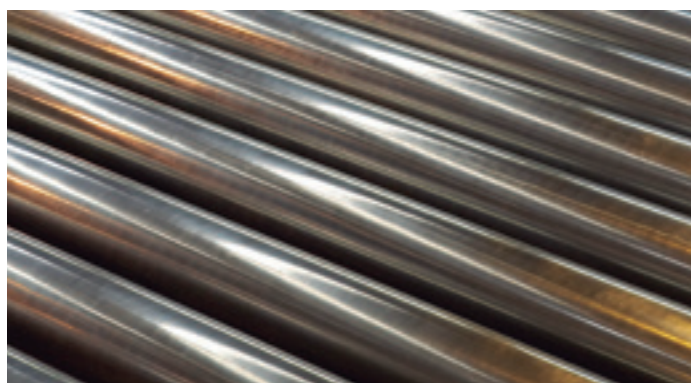
The Tubacex Group has become one of the world's main Seamless Stainless Steel and Nickel Alloy tubular solutions providers.

Founded in 1963, Tubacex brings the experience of a world leader combined with a strong R&D effort which is needed to fulfill the future needs of the industry.

The Tubacex Group, exporting into more than 100 countries worldwide, has a share of around 15% of the world market of Seamless Stainless Steel tubular solutions, with a total workforce of around 2.400 employees. The headquarters are located in Llodio, 25 Km (15 miles) from the seaport city of Bilbao, in northern Spain. The Tubacex Group's integrated production process includes a steel making plant, several extrusion and cold finishing mills, trepanning facilities, fitting and special components producers and wide network of service centers which provide a wide range of added value operations to the group's portfolio.



Tubacex: a global integrated Group at your Service



STAINLESS STEEL AND HIGH NICKEL ALLOYS INGOTS, BARS AND BILLETS

Stainless Steel and High Nickel Alloy long products are produced by the Group's subsidiary Acerálava, either rolled or forged up to 20":

- Round bar
- Round billet
- Square billet
- Ingot



SEAMLESS PIPES AND TUBES EXTRUSION/COLD DRAWING

Seamless pipes up to 8" are the bulk of Tubacex portfolio, with focus in Stainless Steel and High Nickel Alloys materials. This includes:

- Pipes and tubes for several applications
 - Straight / U-bended tubes
 - Welded and coiled seamless tubes (for umbilical application)
- Mechanical tubing



BIG OUTSIDE DIAMETER SEAMLESS PIPES AND TUBES

The Tubacex Group completes its seamless portfolio with trepanning/boring technology that expands manufacturing range to 72" OD, in all materials from carbon steel to titanium – with main focus in Stainless Steel and High Nickel alloys.



FITTINGS AND SPECIAL COMPONENTS

The Tubacex Group's range includes the design and manufacturing of butt welding fittings, tube bends, elbows, tees, reducers and caps (both seamless and welded), complementing the wide offer of tubular solutions, in a complete manufacturing range that goes up to 72" in any thickness.

INNOVATION (WITH FOCUS IN NEW SOLUTIONS AND VALUE ADDED OPERATIONS) AND SERVICE AS MAIN GROWTH DRIVERS

Worldwide presence

Through our commercial offices

Competitiveness

Thanks to our lean manufacturing process

Service

Cooperation with our customers

Flexibility

In materials chemical composition & deliveries

Reliability

Of a fully integrated company

Our Customers are the main driver of The Tubacex Group's activity and efforts. Our organization and investments are continuously adapting to fulfill the increasing requirements that companies are facing everyday in high demanding activities in the oil & gas, petrochemical, chemical and power generation industries, amongst others. These new challenging needs are driving us to implement in our mills the most advanced verification equipment and inspection procedures to assure product quality and a high service, guaranteed by a fully integrated company with a worldwide presence.



OIL AND GAS EXPLORATION AND PRODUCTION

New challenging corrosive environments and applications are driving Tubacex product portfolio of corrosion resistant alloys in both on-shore and off-shore E&P, with a particular focus in:

- Oil Country Tubular Goods (OCTG) • Umbilical tubes along with a wide range of Seamless Stainless and High Nickel Alloys for subsea application (risers, flowlines, manifolds...)
- Tubes for platforms (piping systems, separators...).



REFINING, PETROCHEMICAL AND CHEMICAL

Tubacex offers an extensive grade and size portfolio to achieve designers expectations regarding several areas and equipments in the Petrochemical and Chemical industry, particularly:

- Regas Facilities • Refineries • Heat exchangers • Reactors • Furnaces, Heaters and Re-Heaters • Other process industries.



FERTILIZER PRODUCTION

Fertilizer production materials need to bear severe corrosion conditions. Tubacex provides pipes & tubes for the equipment involved in the production of Urea, Ammonia, Nitric acid, Sulphuric acid, Phosphoric acid and Melamine.

- Strippers • Condensers • Scrubbers • Reactors • Piping



POWER GENERATION

Tubacex's manufacturing range covers the main stainless steel heat resistant grades used in boiler equipment, in both:

- Critical equipment • Ultra Super Critical (USC) equipment • Industrial power plants
- Nuclear power plants.












STOCK FOR DISTRIBUTION AND OTHER INDUSTRIES

Tubacex's manufacturing range covers the main seamless stainless steel portfolio for distributors worldwide:

- Pipes and Tubes according to all relevant standards • Hollow Bars for metal-mechanic industry through Tubacex Service Solutions • Instrumentation and Hydraulic tubing for a wide range of high added value industries, including automotive and aerospace. • Round Bars.

The Widest Portfolio in Stainless Steel

A truly global solutions provider at your service

| | SOLUTIONS | BUSINESS UNIT |
|---|---|---|
|  | Stainless Steel and High Nickel alloys bars and billets | ACERALAVA TUBACEX GROUP |
|  | Seamless Pipe and Tubes to 8" (extrusion, piercing, cold finishing) | TTI TUBACEX GROUP |
|  | | SCHOELLER BLECKMANN TUBACEX GROUP |
|  | | SALEM TUBE TUBACEX GROUP |
|  | | TUBACEX INDIA TUBACEX GROUP |
|  | Seamless Pipe and Tubes to 72" | IBF TUBACEX GROUP |
|  | Fittings and special connections from 1/2" to 72" | TTA TUBACEX GROUP |
|  | | AWAJI STAINLESS TUBACEX GROUP |
|  | Stock, Service and Trading Value added operations | TSS TUBACEX GROUP |
|  | | TUBACEX UPSTREAM TECHNOLOGIES TUBACEX GROUP |

RANGE

Round and Square Stainless and Nickel Alloy Billets

Rolled from 120 to 280 mm (4 ¾" - 11")

Forged from 230 to 508 mm (9" - 20")

Acerálava is the main steel supplier of the Tubacex Group's companies. It also supplies its products to the Stainless Steel Market. Acerálava's manufacturing range covers the main stainless steel grades requested by the industry, with exceptions possible on request.

Seamless Stainless Steel and Nickel Alloy tubes and pipes

The size manufactured through the extrusion press and the 11 cold rolling machines, goes from ½" up to 8" NPS, or 19 - 250 mm OD, at manufacturing facilities located at Llodio and Amurrio (Spain).

A specific line is fully devoted to OCTG (Oil Country Tubular Goods) manufacturing, in a range that goes to 9 5/8" (currently in trial).

Seamless Stainless Steel pipes and tubes

Schoeller Bleckmann Edelstahlrohr, located in Ternitz, Austria, manufactures Seamless Stainless Steel in dimensions between 1/8" and 8" NPS, or 6 - 250 mm OD.

A specific plant is devoted to special tube manufacturing, with focus in straight and welded tubes for umbilical application and other high demanding applications (Nuclear, Fertilizer).

Welded and Seamless Stainless Steel and Nickel Alloy tubes.

Located in Greenville, PA (USA) Salem tube's manufacturing range goes from 1/8" to 2" OD.

The company is highly specialized in precision tubing for the most demanding industries such as military and aerospace, with a heavy concentration of high nickel alloy in their product portfolio.

Seamless Stainless Steel tubes and pipes

Located in Umbergaon (Gujarat- India), Tubacex India manufactures cold finished tubes and pipes from 6 mm OD to 273.1 mm OD

The company is able to deliver tubes up to 28 m (length), straight and U-Shape, to a wide range of customers. The company is ISO 9000 and ISO 14000 certified.

Mechanically bored tubes

Located in Vittuone, Italy, IBF pipes division manufactures mechanically bored tubes up to 72" in any wall thickness.

Fittings

Located in San Niccolo, Italy, IBF fittings and special parts division manufactures fittings, elbows, and special components in a manufacturing range that goes from ½" to 72" NPS.

Stainless steel (also carbon and alloy) butt welding fittings

Size range goes from 1 ½" up to 12" NPS, in short and long radius as well as in special radii.

Located in Artziniega, Spain, Tubacex Taylor Accesorios (TTA) manufactures fittings (elbows and return bends) mainly for the Petrochemical industry, perfectly complementing the portfolio of the rest of The Group.

Stainless Fittings

Located in Amphur Muang-Samutprakarn, Thailand, Awaji Stainless manufactures stainless fittings (seamless and welded) in austenitic grades from 1/2" to 12".

The company is able to manufacture in both ASTM and JIS standards - for the high quality demanding Japanese market.

Global Network of service centers

Service centers located in Spain, France, Austria, the United States, Brazil, China, India and Dubai.

Special added value operations in Tubacex Services.





OCTG added value operations

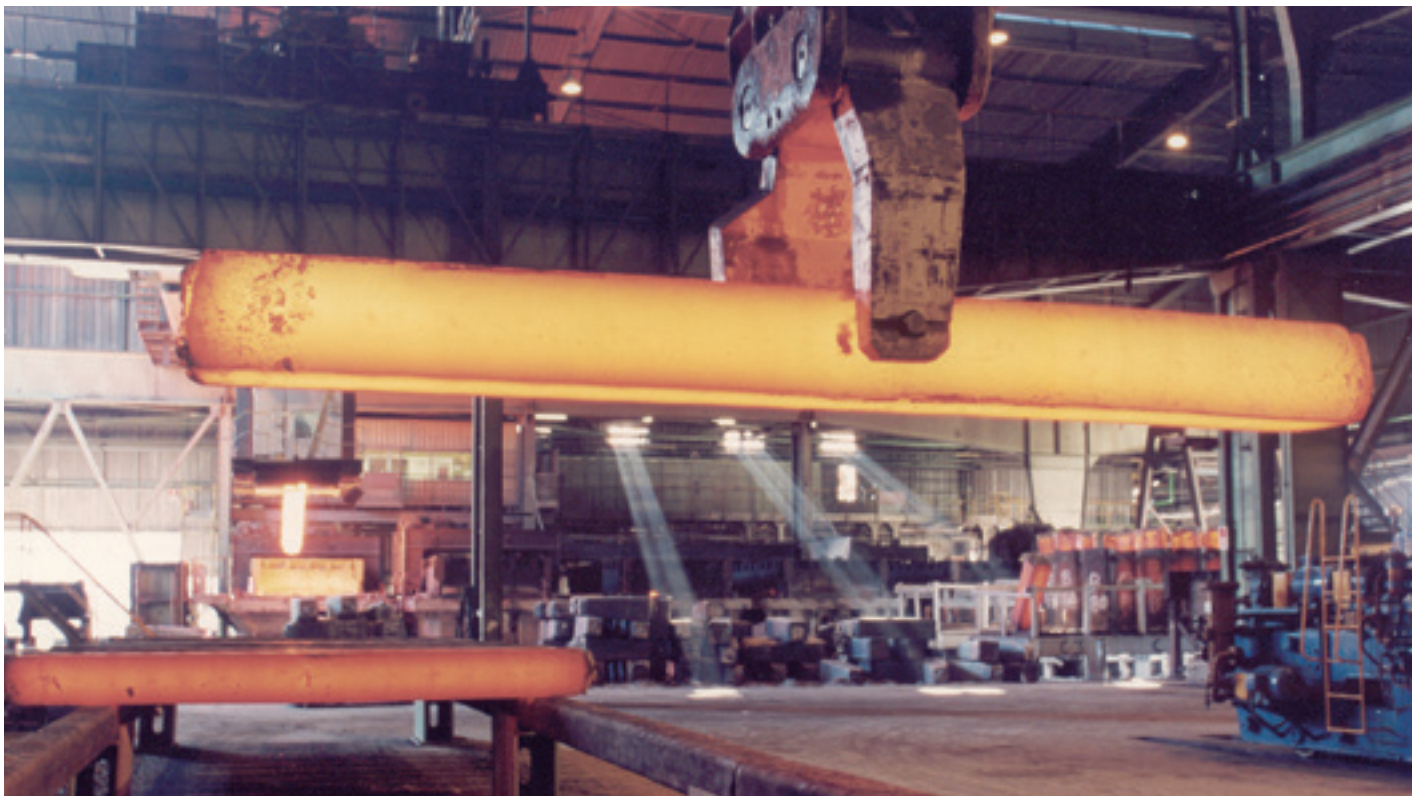
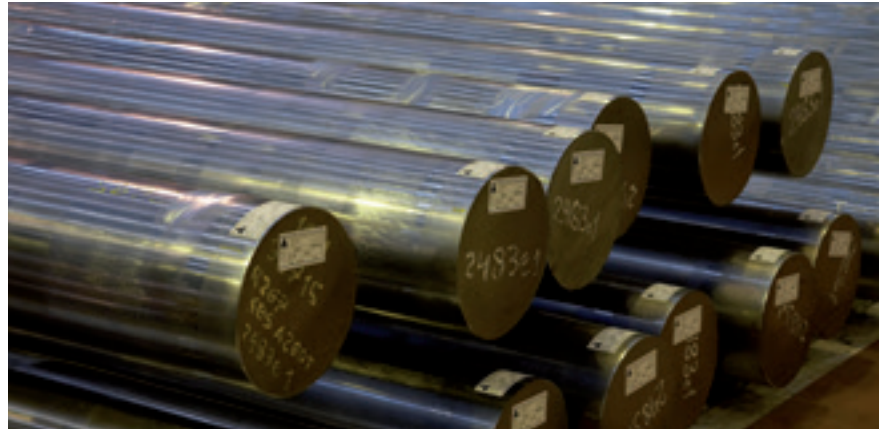
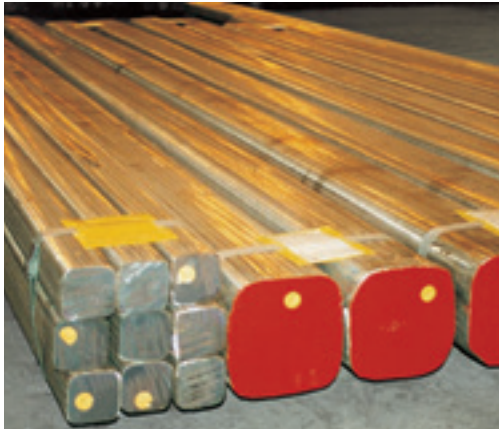
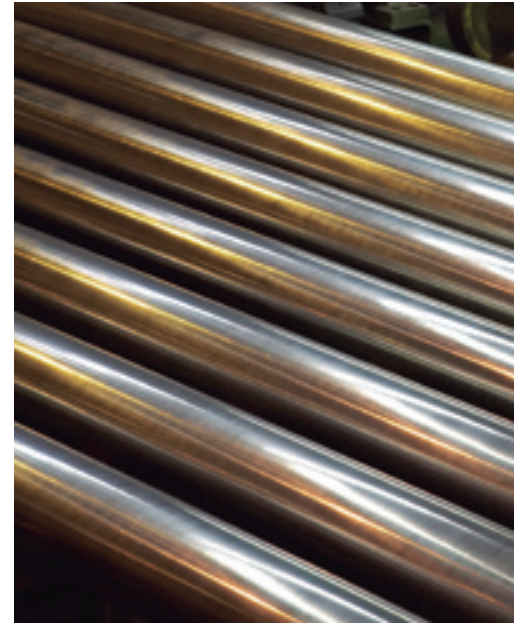
Located in Spain, Tubacex Upstream Technologies provides worldwide OCTG value added operations.

Stainless Steel Bars and Billets

Acerálava is The Tubacex Group's steel melting shop, which provides the bulk of raw material supply for the rest of the Group's manufacturing units. In addition, Acerálava offers a wide stainless steel portfolio to our customers.

Acerálava's product range includes stainless steel long products such as square and round bars, billets and ingots, rolled and forged. Our standard portfolio can be defined as follows:

| ROUNDS BARS & BILLETS | | | |
|---|--------------------------------------|-----------|---|
| Products | Size range | Condition | Grades |
|  | 165 mm. up to 230 mm. (6 1/2" - 9") | Rolled | Martensitics Austenitics Ferritic - Austenitics High Nickel Alloys |
|  | 230 mm. up to 500 mm. (9" - 19 3/4") | Forged | |
| SQUARE BILLETS | | | |
| Products | Size range | Condition | Grades |
|  | 120 mm. up to 280 mm. (4 3/4" - 11") | Rolled | Martensitics Austenitics Ferritic - Austenitics High Nickel Alloys |
|  | 280 mm. up to 508 mm. (11" - 20") | Forged | |



Stainless Steel Bars and Billets

Acerálava's manufacturing range covers the main stainless steel grades requested by the industry and a tailor made list of steels. Our metallurgical engineers are devoted to the development of sophisticated steels capable of operating in the demanding environments of the future. Exceptions over the standard steel grades can be met upon request.



| STAINLESS STEEL GRADES | | | | | | | | |
|------------------------|--------------|--------|---------------------|-----------|-----------|-----------|---------|--|
| | ASTM | WNR | AFNOR | C max* | Cr | Ni | Mo | Other |
| AUSTENITIC | 304 | 1.4301 | TU Z 6 CN 18-09 | 0,08 | 17/20 | 8/11 | | |
| | 304 L | 1.4306 | TU Z 2 CN 18-10 | 0,03 | 18/20 | 10/12 | | |
| | 304 L | 1.4307 | TU Z 3 CN 19-09 | 0,03 | 17,5/19,5 | 8/10,5 | | |
| | 304 H | | TU Z 6 CN 19-10 | 0,04/0,10 | 18/20 | 8/11 | | |
| | TX304HB** | 1.4907 | | 0,07 | 17/19 | 7,5/10,5 | | Nb 0,3/0,6 Cu 2,5/3,5 |
| | 321 | 1.4541 | TU Z 6 CNT 18-10 | 0,08 | 17/19 | 9/12 | | 5 C ≤ Ti ≤ 0,60 |
| | 321 H | | TU Z 6 CNT 18-12 B | 0,04/0,10 | 17/20 | 9/13 | | 4 C ≤ Ti ≤ 0,60 |
| | 347 | 1.4550 | TU Z 6 CNNb 18-10 | 0,08 | 17/19 | 9/12 | | 10 C ≤ Nb ≤ 1,0 |
| | 347 H | | TU Z 6 CNNb 18-12 B | 0,04/0,08 | 17/20 | 9/13 | | 8 C ≤ Nb ≤ 1,0 |
| | 347 H FG | 1.4908 | | 0,07 | 17/19 | 9/13 | | 8 C ≤ Nb ≤ 1,1 |
| | 316 | 1.4401 | TU Z 6 CND 17-11 | 0,08 | 16/18 | 11/14 | 2/3 | |
| | 316 L | 1.4404 | TU Z 2 CND 17-12 | 0,03 | 16/18 | 11/14 | 2/3 | |
| | 316 Ti | 1.4571 | TU Z 6 CNDT 17-12 | 0,08 | 16,5/18,5 | 10,5/13,5 | 2/2,5 | 5 C ≤ Ti ≤ 0,80 |
| | (316 L) | 1.4435 | TU Z 2 CND 17-13 | 0,03 | 17/18,5 | 12,5/15 | 2,5/3 | |
| | (316) | 1.4436 | TU Z 6 CND 17-12 | 0,07 | 16,5/18,5 | 11/14 | 2,5/3 | |
| | 316 Nb | 1.4580 | | 0,08 | 16/18 | 11/13 | 2/2,5 | 10 C < Nb < 1,0 |
| | 316 N/316 LN | | | 0,03 | 16/18 | 11/14 | 2/3 | N 0,10/0,16 |
| | 316 L urea | | | 0,03 | 17/18 | 13/15 | 2/3 | |
| | 317 | | TU Z 2 CND 19-15 | 0,08 | 18/20 | 11/15 | 3/4 | |
| | 317 L | 1.4438 | TU Z 2 CND 19-15 | 0,03 | 18/20 | 11/15 | 3/4 | |
| | 309 S/309 H | 1.4833 | TU Z 12 CN 24-12 | 0,08 | 22/24 | 12/15 | ≤ 0,75 | |
| | 310 S/310 H | 1.4845 | TU Z 12 CN 25-20 | 0,08 | 24/26 | 19/22 | ≤ 0,75 | |
| | 310 HCBN | 1.4952 | | 0,07 | 24/26 | 19/22 | | 0,2 ≤ Nb ≤ 0,6 |
| | 310 MoLN | 1.4466 | | 0,02 | 24/26 | 21/23 | 2/2,5 | N=0,1/0,15 Si<0,4 P<0,02 |
| | | 1.4828 | TU Z 17 CNS 20-12 | 0,20 | 19/21 | 11/13 | | Si 1,5/2,5 |
| | 314 | 1.4841 | TU Z 15 CNS 25-20 | 0,15 | 24/26 | 19/21 | | Si 1,5/2,5 |
| | UNS S31254 | 1.4547 | | 0,02 | 19,5/20,5 | 17,5/18,5 | 6,0/6,5 | Cu 0,50/1,00 N 0,18/0,22 |
| FERRITIC AUSTENITIC | UNS S31803 | 1.4462 | TU Z 2 CND 22-05-03 | 0,03 | 21/23 | 4,5/6,5 | 2,5/3,5 | N 0,12/0,20 |
| | UNS S32750 | 1.4410 | | | 24,0/26,0 | 6,0/8,0 | 3,0/5,0 | |
| | UNS S32760 | 1.4501 | TU Z 3 CND 25-06-Az | 0,03 | 24/26 | 6/8 | 3/5 | N 0,2/0,3 Cu & W 0,5/1,0 |
| HIGH NICKEL | 904 L | 1.4539 | TU Z 1 CNDU 25-20 | 0,02 | 19/21 | 24/26 | 4/5 | Cu 1,20/2,00 N 0,04/0,10 |
| | 800-H-HT | 1.4876 | (TU Z10 NC 32-21) | 0,6/0,10 | 19/23 | 30/35 | | Al & Ti 0,15/0,60 |
| | UNS N08020 | 2.4660 | | 0,07 | 19/21 | 32/38 | 2/3 | Cu 3/4 Nb 8xC-1,0 Fe Balance |
| | UNS N08825 | 2.4858 | | 0,05 | 19,5/23,5 | 38/46 | 2,5/3,5 | Cu 1,5/3,0 Al 0,2 max Ti 0,6/1,2 Fe Balance |
| | UNS N08028 | 1.4563 | TU Z2 CNDU 31-27 | 0,03 | 26/28 | 30/32 | 3/4 | Cu=0,8/1,4 N=0,04/0,15 Fe Balance |
| | G-3 N06985 | | | | 21,0/23,5 | 44,0/52,0 | 6,5/8,0 | Fe: 18,0/21,0 |

* Maximum unless otherwise indicated. ** Tubacex name.

In addition to these standards, Tubacex's capabilities include a wide range of stainless steel and high nickel alloy grades depending on our customers' requirements.

Seamless Pipes and Tubes Extrusion / Cold drawing

The Tubacex Group has an extensive manufacturing program for Stainless Steel and Nickel Alloys Seamless pipes and tubes covering most dimensions and grades required by the industry. Seamless Stainless Steel Tubing can be hot or cold finished, covering the following range:

MANUFACTURING RANGE

| HOT MANUFACTURING DIMENSIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|-------|--------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|--|-------|--|-----|--|--|-------|--|-------|--|--|-------|--|-----|--|--|-------|--|-------|
| OUTSIDE DIAMETER | | | WALL THICKNESS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ASTM A 312 ASME B.36.10 | | | Inch mm | 0,120 3,05 | 0,126 3,20 | 0,133 3,38 | 0,134 3,40 | 0,140 3,56 | 0,145 3,68 | 0,148 3,76 | 0,154 3,91 | 0,179 4,55 | 0,191 4,85 | 0,200 5,08 | 0,203 5,16 | 0,216 5,49 | 0,218 5,54 | 0,226 5,74 | 0,237 6,02 | 0,250 6,35 | 0,258 6,55 | 0,276 7,01 | 0,280 7,11 | 0,281 7,14 | 0,300 7,62 | 0,318 8,08 | 0,322 8,18 | 0,337 8,56 | 0,344 8,74 | 0,375 9,52 | 0,406 10,31 | 0,432 10,97 | 0,438 11,13 | 0,500 12,7 | 0,531 13,49 | 0,562 14,27 | 0,625 15,88 | 0,719 18,26 | 0,906 23,10 | 1,000 25,40 | Inch mm | | | | | | | | | | | | | | | | | | | |
| NPS | Inch | mm | DIN mm | | 3,2 | | | | 3,6 | | 4,0 | 4,5 | | 5,0 | | 5,49 | 5,54 | 5,6 | | 6,3 | | 7,01 | 7,1 | 7,14 | | 8,0 | 8,18 | | 8,8 | | 10,0 | 11,0 | | 12,5 | | | | | | 25,0 | DIN mm | | | | | | | | | | | | | | | | | | | |
| | 1,496 | | 38,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 38,0 | | | | | | | | | | | | | | | | | | | | | | |
| | 1,575 | | 40,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40,0 | | | | | | | | | | | | | | | | | | | | | | |
| 1 1/4 | 1,660 | 42,16 | 42,4 | 40 | | | | | 80 | | | | | 160 | | | | | | | | | | | | | | | | | | | | 42,4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1,752 | | 44,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44,5 | | | | | | | | | | | | | | | | | | | | | | |
| 1 1/2 | 1,900 | 48,26 | 48,3 | 40 | | | | | 80 | | | | | 160 | | | | | | | | | | | | | | | 48,3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2,008 | | 51,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 51,0 | | | | | | | | | | | | | | | | | | | | | | |
| | 2,126 | | 54,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 54,0 | | | | | | | | | | | | | | | | | | | | | | |
| | 2,244 | | 57,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 57,0 | | | | | | | | | | | | | | | | | | | | | | |
| 2,0 | 2,375 | 60,33 | 60,3 | | | | | | 40 | | | | | 80 | | | | | 160 | | | | | | | | | | 60,3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2,500 | | 63,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 63,5 | | | | | | | | | | | | | | | | | | | | | | |
| | 2,756 | | 70,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 70,0 | | | | | | | | | | | | | | | | | | | | | | |
| 2 1/2 | 2,875 | 73,03 | 76,1 | | | | | | | | | | | 40 | | | | | 80 | | | | | 160 | | | | | | | | | | 76,1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3,0 | 3,500 | 88,9 | 88,9 | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | | | 80 | | | | | 160 | | | | | 88,9 | | | | | | | | | | | | | | | | | |
| 3 1/2 | 4,000 | 101,60 | 101,6 | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | 80 | | | | | | | | | | 101,6 | | | | | | | | | | | | | | | | | |
| | 4,252 | | 108,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 108,0 | | | | | | | | | | | | |
| 4,0 | 4,500 | 114,30 | 114,3 | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | 80 | | | | | 120 | | | | | 160 | | | | | 114,3 | | | | | | | | | | | | |
| | 5,236 | | 133,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 133,0 | | | | | | | | | | | | | | | | | |
| | 5,500 | | 139,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 139,7 | | | | | | | |
| 5,0 | 5,563 | 141,3 | 141,3 | | | | | 10 | | | | | | | | | | | | | | | | | | | | 40 | | | | | 80 | | | | | 120 | | | | | 160 | | | | | 141,3 | | | | | | | | | | | | |
| | 6,260 | | 159,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 159,0 | | | | | | | | | | | | |
| 6,0 | 6,625 | 168,28 | 168,3 | | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 168,3 | | | | | | | | | | | | |
| | 7,626 | | 193,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | 80 | | | | | 120 | | | | | 160 | | | | | 193,7 | | | | | | | | | | |
| 8,0 | 8,625 | 219,08 | 219,1 | | | | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | 60 | | | | | 80 | | | | | 120 | | | | | 160 | | | | | 219,1 |
| | 9,000 | | 228,6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 228,6 | | |
| | 9,626 | | 244,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 244,5 | | |

Range of Tubacex Tubos Inoxidables and Schoeller Bleckmann Edelstahlrohr for austenitic hot manufactured tubes and pipes. Production according to main manufacturing standards (ASTM/ASME, EN and other international manufacturing standards). Non standard articles available upon request.

COLD MANUFACTURING DIMENSIONS

| OUTSIDE DIAMETER | | | WALL THICKNESS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|-------|--------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------|-------|--------|-------|------|
| ASTM A 312 ASME B 36.10 | | | Inch mm | 0,020 | 0,035 | 0,049 | 0,065 | 0,083 | 0,091 | 0,102 | 0,109 | 0,113 | 0,120 | 0,126 | 0,133 | 0,134 | 0,140 | 0,145 | 0,148 | 0,154 | 0,179 | 0,191 | 0,200 | 0,203 | 0,216 | 0,219 | 0,226 | 0,237 | 0,250 | 0,258 | 0,276 | 0,280 | 0,300 | 0,318 | 0,322 | 0,337 | 0,375 | 0,432 | 0,500 | 0,559 | Inch mm | | | | |
| NPS | Inch | mm | DIN mm | 0,5 | 0,9 | 1,2 | 1,6 | 2,0 | 2,3 | 2,6 | | 2,9 | | 3,2 | | | 3,6 | | | 4,0 | 4,5 | | 5,0 | | | 5,6 | | 5,6 | 5,74 | 6,02 | 6,35 | 6,55 | 7,01 | 7,11 | 7,62 | 8,08 | 8,18 | 8,56 | 9,53 | 10,97 | 12,70 | 14,20 | DIN mm | | |
| | 0,125 | 3,17 | 3,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3,0 | |
| | 0,236 | | 6,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6,0 |
| | 0,315 | | 8,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8,0 |
| 1/8 | 0,405 | 10,29 | 10,2 | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10,2 |
| | 0,472 | | 12,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12,0 |
| 1/4 | 0,540 | 13,72 | 13,5 | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 13,5 |
| | 0,630 | | 16,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 16,0 |
| 3/8 | 0,675 | 17,15 | 17,2 | | | | 10 | | 40 | | | | | 80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17,2 |
| | 0,748 | | 19,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 19,0 |
| | 0,787 | | 20,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 20,0 |
| 1/2 | 0,840 | 21,34 | 21,3 | | | | 5 | 10 | | | | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 21,3 |
| | 0,984 | | 25,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 25,0 |
| 3/4 | 1,050 | 26,67 | 26,9 | | | | 5 | 10 | | | | 40 | | | | | | | | 80 | | | | | | | | 160 | | | | | | | | | | | | | | | | | 26,9 |
| | 1,181 | | 30,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30,0 |
| | 1,260 | | 32,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32,0 |
| 1,0 | 1,315 | 33,40 | 33,7 | | | | 5 | | | | 10 | | | 40 | | | | | | 80 | | | | | | | | 160 | | | | | | | | | | | | | | | | | 33,7 |
| | 1,378 | | 35,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 35,0 |
| | 1,496 | | 38,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 38,0 |
| | 1,575 | | 40,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40,0 |
| 1 1/4 | 1,660 | 42,16 | 42,4 | | | | 5 | | | | 10 | | | | | 40 | | | | 80 | | | | | | | | 160 | | | | | | | | | | | | | | | | | 42,4 |
| | 1,752 | | 44,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44,5 |
| 1 1/2 | 1,900 | 48,26 | 48,3 | | | | 5 | | | | 10 | | | | | | 40 | | | | 80 | | | | | | | | 160 | | | | | | | | | | | | | | | | 48,3 |
| | 2,008 | | 51,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 51,0 |
| | 2,244 | | 57,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 57,0 |
| 2,0 | 2,375 | 60,33 | 60,3 | | | | | | | | 10 | | | | | | | | | 40 | | | | | | | | | | | | | | | | | | | | | | | | | 60,3 |
| | 2,500 | | 63,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 63,5 |
| | 2,756 | | 70,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 70,0 |
| 2 1/2 | 2,875 | 73,03 | 76,1 | | | | 5 | | | | | 10 | | | | | | | | | | | | | | | 40 | | | 80 | | | | | | | | | 160 | | | | | | 76,1 |
| 3,0 | 3,500 | 88,90 | 88,9 | | | | | 5 | | | | | 10 | | | | | | | | | | | | | | | 40 | | | | | | 80 | | | | | | | | | | 88,9 | |
| 3 1/2 | 4,000 | 101,60 | 101,6 | | | | | | | | | | 10 | | | | | | | | | | | | | | | | 40 | | | | | | | 80 | | | | | | | | 101,6 | |
| | 4,252 | | 108,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 108,0 | |
| 4,0 | 4,500 | 114,30 | 114,3 | | | | | | | | | | 10 | | | | | | | | | | | | | | | | 40 | | | | | | | | 80 | | | | | | | 114,3 | |
| | 5,236 | | 133,0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 133,0 | |
| 5,0 | 5,563 | 141,30 | 141,3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | 120 | | | 141,3 | |
| 6,0 | 6,625 | 168,28 | 168,3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 168,3 | |
| | 7,626 | | 193,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 193,7 | |
| 8,0 | 8,625 | 219,08 | 219,1 | | | | | | | | | | | | | | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | 219,1 | |

Range of Tubacex Tubos Inoxidables, Schoeller Bleckmann Edelstahlrohr, Salem Tube and Tubacex India for Austenitic cold manufactured tubes and pipes. Production according to main manufacturing standards (ASTM/ASME, EN and other international manufacturing standards). Non standard articles available on request.

Seamless Pipes and Tubes Extrusion / Cold drawing

WEIGHT PER METER CONVERSION

| SEAMLESS PIPE | | | | | | | | | | | | | | | Wall thickness: Average | |
|--|-----------------|---------------|--------------|---------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|-------------------------|--|
| APPROXIMATE WEIGHTS ACC. TO. ANSI / ASME B36.19 AND ASME B36.10 DIMENSIONS | | | | | | | | | | | | | | | | |
| NPS | OD | Sch 5S | | Sch 10S | | Sch 40S | | Sch 80S | | Sch 120S | | Sch 160S | | XXS | | |
| | | Wall | Wt | Wall | Wt | Wall | Wt | Wall | Wt | Wall | Wt | Wall | Wt | Wall | Wt | |
| | mm | mm | kg/m | mm | kg/m | mm | kg/m | mm | kg/m | mm | kg/m | mm | kg/m | mm | kg/m | |
| inch | inches | inch. | lb/ft | inch. | lb/ft | inch. | lb/ft | inch. | lb/ft | inch. | lb/ft | inch. | lb/ft | inch. | lb/ft | |
| 1/8" | 10.29 0.405 | 0.89 0.035 | 0.21 0.14 | 1.24 0.049 | 0.28 0.19 | 1.73 0.068 | 0.37 0.25 | 2.41 0.095 | 0.48 0.32 | | | | | | | |
| 1/4" | 13.72 0.540 | 1.24 0.049 | 0.39 0.26 | 1.65 0.065 | 0.50 0.34 | 2.24 0.088 | 0.64 0.43 | 3.02 0.119 | 0.81 0.54 | | | | | | | |
| 3/8" | 17.15 0.675 | 1.24 0.049 | 0.49 0.33 | 1.65 0.065 | 0.64 0.43 | 2.31 0.091 | 0.86 0.58 | 3.20 0.126 | 1.12 0.75 | | | | | | | |
| 1/2" | 21.34 0.840 | 1.65 0.065 | 0.81 0.54 | 2.11 0.083 | 1.02 0.68 | 2.77 0.109 | 1.29 0.87 | 3.73 0.147 | 1.64 1.10 | | | 4.78 0.188 | 1.98 1.33 | | | |
| 3/4" | 26.67 1.050 | 1.65 0.065 | 1.03 0.69 | 2.11 0.083 | 1.30 0.87 | 2.87 0.113 | 1.71 1.15 | 3.91 0.154 | 2.23 1.50 | | | 5.56 0.219 | 2.94 1.97 | | | |
| 1" | 33.40 1.315 | 1.65 0.065 | 1.31 0.88 | 2.77 0.109 | 2.12 1.43 | 3.38 0.133 | 2.54 1.71 | 4.55 0.179 | 3.29 2.21 | | | 6.35 0.250 | 4.30 2.89 | 9.09 0.358 | 5.53 3.71 | |
| 1 1/4" | 42.16 1.660 | 1.65 0.065 | 1.67 1.12 | 2.77 0.109 | 2.73 1.83 | 3.56 0.140 | 3.44 2.31 | 4.85 0.191 | 4.53 3.04 | | | 6.35 0.250 | 5.69 3.82 | 9.70 0.382 | 7.88 5.29 | |
| 1 1/2" | 48.26 1.900 | 1.65 0.065 | 1.93 1.30 | 2.77 0.109 | 3.15 2.12 | 3.68 0.145 | 4.11 2.76 | 5.08 0.200 | 5.49 3.69 | | | 7.14 0.281 | 7.35 4.93 | 10.16 0.400 | 9.69 6.51 | |
| 2" | 60.32 2.375 | 1.65 0.065 | 2.42 1.62 | 2.77 0.109 | 3.99 2.68 | 3.91 0.154 | 5.52 3.71 | 5.54 0.218 | 7.60 5.10 | | | 8.74 0.344 | 11.29 7.58 | 11.07 0.436 | 13.65 9.16 | |
| 2 1/2" | 73.02 2.875 | 2.11 0.083 | 3.75 2.52 | 3.05 0.120 | 5.34 3.59 | 5.16 0.203 | 8.77 5.89 | 7.01 0.276 | 11.58 7.78 | | | 9.52 0.375 | 15.14 10.16 | 14.02 0.552 | 20.71 13.90 | |
| 3" | 88.90 3.500 | 2.11 0.083 | 4.59 3.08 | 3.05 0.120 | 6.56 4.40 | 5.49 0.216 | 11.46 7.70 | 7.62 0.300 | 15.50 10.41 | | | 11.13 0.438 | 21.67 14.55 | 15.24 0.600 | 28.10 18.87 | |
| 3 1/2" | 101.60 4.000 | | | 3.05 0.120 | 7.52 5.05 | 5.74 0.226 | 13.77 9.25 | 8.08 0.318 | 18.92 12.70 | | | 12.70 0.500 | 28.26 18.97 | 16.15 0.636 | 34.55 23.19 | |
| 4" | 114.30 4.500 | | | 3.05 0.120 | 8.49 5.70 | 6.02 0.237 | 16.32 10.96 | 8.56 0.337 | 22.66 15.21 | 11.13 0.438 | 28.74 19.30 | 13.49 0.531 | 34.04 22.85 | 17.12 0.674 | 41.66 27.97 | |
| 5" | 141.30 5.563 | | | 3.40 0.134 | 11.74 7.88 | 6.55 0.258 | 22.09 14.83 | 9.52 0.375 | 31.41 21.09 | 12.70 0.500 | 40.88 27.45 | 15.88 0.625 | 49.87 33.48 | 19.05 0.750 | 58.32 39.15 | |
| 6" | 168.28 6.625 | | | 3.40 0.134 | 14.03 9.42 | 7.11 0.280 | 28.69 19.26 | 10.97 0.432 | 43.20 29.00 | 14.27 0.562 | 55.02 36.94 | 18.26 0.719 | 68.59 46.05 | 21.95 0.864 | 80.43 54.00 | |
| 8" | 219.08 8.625 | | | 3.76 0.148 | 20.27 13.61 | 8.18 0.322 | 43.19 28.99 | 12.70 0.500 | 65.61 44.05 | 18.26 0.719 | 91.79 61.63 | 23.04 0.906 | 112.94 75.82 | 22.22 0.875 | 109.53 73.53 | |

For minimum wall according to ASTM A 213 add 10%

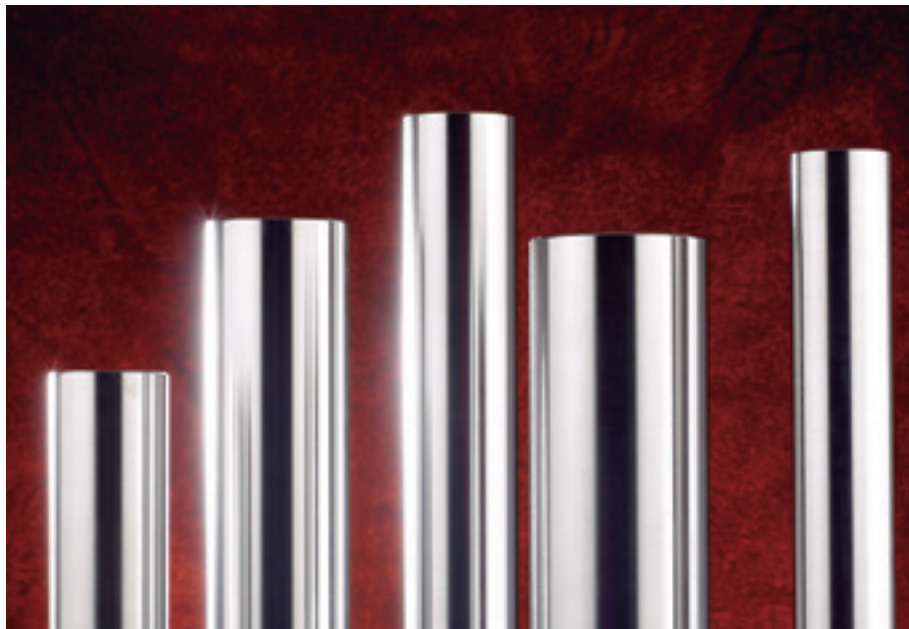
| SEAMLESS TUBE | | | | | | | | | | | | | | | Wall thickness: Average | | |
|--|-------|------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|
| APPROXIMATE WEIGHTS ACC. TO. BIRMINGHAM WIRE GAUGE - BWG | | | | | | | | | | | | | | | | | |
| inch | mm | mm inch | 20 0,890 0,035 | 18 1,245 0,049 | 16 1,650 0,065 | 15 1,830 0,072 | 14 2,110 0,083 | 13 2,410 0,095 | 12 2,770 0,109 | 11 3,050 0,120 | 10 3,400 0,134 | 9 3,760 0,148 | 8 4,190 0,165 | 7 4,570 0,180 | 6 5,160 0,203 | 5 5,590 0,220 | 4 6,040 0,238 |
| 1/4" | 0,250 | 6,35 | kg/m 0,12 0,08 | 0,16 0,11 | 0,19 0,13 | | | | | | | | | | | | |
| 3/8" | 0,375 | 9,53 | kg/m 0,19 0,13 | 0,26 0,17 | 0,33 0,22 | 0,35 0,24 | 0,39 0,26 | | | | | | | | | | |
| 1/2" | 0,500 | 12,70 | kg/m 0,26 0,18 | 0,36 0,24 | 0,46 0,31 | 0,50 0,33 | 0,56 0,38 | 0,62 0,42 | 0,69 0,46 | 0,74 0,50 | | | | | | | |
| 5/8" | 0,625 | 15,88 | kg/m 0,33 0,22 | 0,46 0,31 | 0,59 0,40 | 0,64 0,43 | 0,73 0,49 | 0,81 0,55 | 0,91 0,61 | 0,98 0,66 | 1,05 0,70 | 1,13 0,76 | | | | | |
| 3/4" | 0,750 | 19,05 | kg/m 0,40 0,27 | 0,55 0,37 | 0,72 0,48 | 0,79 0,53 | 0,89 0,60 | 1,01 0,68 | 1,13 0,76 | 1,22 0,82 | 1,33 0,90 | 1,40 0,94 | 1,52 1,02 | 1,61 1,08 | 1,73 1,16 | | |
| 1" | 1,000 | 25,40 | kg/m 0,75 0,51 | 0,98 0,66 | 1,08 0,73 | 1,23 0,83 | 1,39 0,93 | 1,57 1,05 | 1,71 1,15 | 1,87 1,26 | 2,00 1,35 | 2,18 1,45 | 2,33 1,56 | 2,56 1,73 | | | |
| 1 1/4" | 1,250 | 31,75 | kg/m 0,95 0,64 | 1,24 0,84 | 1,37 0,92 | 1,56 1,05 | 1,77 1,19 | 2,01 1,35 | 2,19 1,47 | 2,42 1,62 | 2,60 1,75 | 2,85 1,91 | 3,05 2,05 | 3,37 2,26 | 3,58 2,41 | 3,80 2,55 | |
| 1 1/2" | 1,500 | 38,10 | kg/m 1,15 0,77 | 1,51 1,01 | 1,66 1,12 | 1,90 1,28 | 2,16 1,45 | 2,45 1,65 | 2,68 1,80 | 2,96 2,15 | 3,20 2,35 | 3,51 2,35 | 3,78 2,55 | 4,19 2,82 | 4,47 3,01 | 4,75 3,19 | |
| 1 3/4" | 1,750 | 44,45 | kg/m 1,35 0,90 | 1,77 1,19 | 1,95 1,31 | 2,24 1,50 | 2,54 1,71 | 2,89 1,94 | 3,16 2,12 | 3,50 2,35 | 3,83 2,57 | 4,21 2,83 | 4,55 3,05 | 5,05 3,39 | 5,40 3,63 | 5,76 3,87 | |
| 2" | 2,000 | 50,80 | kg/m 2,03 1,37 | | 2,03 1,37 | 2,24 1,51 | 2,57 1,73 | 2,92 1,96 | 3,33 2,24 | 3,64 2,45 | 4,04 2,71 | 4,43 2,97 | 4,88 3,28 | 5,28 3,55 | 5,87 3,95 | 6,30 4,24 | 6,73 4,52 |
| 2 1/4" | 2,250 | 57,15 | kg/m 2,53 1,70 | | | 2,53 1,70 | 2,91 1,95 | 3,31 2,22 | 3,77 2,53 | 4,13 2,77 | 4,58 3,08 | 5,04 3,38 | 5,55 3,74 | 6,01 4,04 | 6,70 4,50 | 7,20 4,84 | 7,70 5,17 |
| 2 1/2" | 2,500 | 63,50 | kg/m 2,82 1,90 | | | 2,82 1,90 | 3,24 2,18 | 3,69 2,48 | 4,23 2,84 | 4,61 3,12 | 5,13 3,44 | 5,64 3,79 | 6,23 4,18 | 6,74 4,54 | 7,54 5,06 | 8,09 5,44 | 8,66 5,82 |
| 3" | 3,000 | 76,20 | kg/m 3,91 2,63 | | | | 3,91 2,63 | 4,46 3,00 | 5,14 3,42 | 5,58 3,75 | 6,20 4,17 | 6,82 4,58 | 7,57 5,08 | 8,25 5,54 | 9,19 6,18 | 9,91 6,66 | 10,62 7,14 |
| 3 1/2" | 3,500 | 88,90 | kg/m 4,58 3,08 | | | | 4,58 3,08 | 5,23 3,51 | 5,97 4,01 | 6,55 4,40 | 7,29 4,90 | 8,02 5,38 | 8,91 5,97 | 9,70 6,52 | 10,85 7,28 | 11,71 7,85 | 12,55 8,44 |

For minimum wall according to ASTM A 213 add 10%

Stainless Steel Mechanical Tubes

Tubacex Group covers the Mechanical Tube market mainly through Tubacex Service Solutions (Cotubes, MIS and Tubacex America). Cotubes in particular, is specialized in the commercialization of Hollow Bar manufactured in both T.T.I. Tubacex Tubos Inoxidables and Schoeller Bleckmann Edelstahlrohr. Cotubes offers excellent availability supported by a global distribution network. In addition, the company operates one of the world's most relevant seamless stainless steel tubes and pipes stocks.

| SEAMLESS STAINLESS MECHANICAL TUBES MANUFACTURING RANGE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------------------------|------|------|-----|------|------|------|----|------|------|------|------|----|------|------|------|------|------|------|------|------|------|----|-----|------|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|------|-----|-----|-----|--|--|
| | | Wall thickness: Average | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OUTSIDE DIAMETER | OD | INSIDE DIAMETER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 16 | 20 | 25 | 28 | 32 | 36 | 40 | 45 | 50 | 55 | 56 | 60 | 61 | 63 | 67 | 69 | 71 | 75 | 80 | 85 | 90 | 95 | 98 | 100 | 106 | 110 | 112 | 118 | 122 | 125 | 130 | 132 | 140 | 150 | 160 | 170 | 180 | 186 | 190 | 200 | | |
| | 32 | 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 36 | 10 | 8 | 5,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 40 | | 10 | 7,5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 45 | | 12,5 | | 8,5 | 6,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 50 | | | 12,5 | | 9 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 56 | | | | 14 | | 10 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 63 | | | | | 15,5 | 13,5 | 11,5 | 9 | 6,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 71 | | | | | | 17,5 | 15,5 | 13 | 10,5 | 7,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 75 | | | | | | | 17,5 | 15 | 12,5 | 9,5 | 7,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 80 | | | | | | | | 20 | 17,5 | 15 | 12 | | | 8,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 85 | | | | | | | | | 20 | 17,5 | 15 | | 12 | | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 90 | | | | | | | | | | 20 | 17 | | | 13,5 | 11,5 | | 9,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 95 | | | | | | | | | | | 22,5 | 19,5 | | | 16 | | 13 | | 10 | | | | | | | | | | | | | | | | | | | | | | | |
| | 100 | | | | | | | | | | | | 22 | | | 18,5 | | | 14,5 | 12,5 | 10 | | | | | | | | | | | | | | | | | | | | | | |
| | 106 | | | | | | | | | | | | 25 | | | | 21,5 | | | 17,5 | 13 | 10,5 | | | | | | | | | | | | | | | | | | | | | |
| | 112 | | | | | | | | | | | | | | | | | 24,5 | | | 20,5 | 16 | 13,5 | 11 | | | | | | | | | | | | | | | | | | | |
| | 118 | | | | | | | | | | | | | | | | | | 27,5 | | | 23,5 | 19 | | 14 | 11,5 | | | | | | | | | | | | | | | | | |
| | 125 | | | | | | | | | | | | | | | | | | | | 27 | 22,5 | 17,5 | 15 | | 12,5 | | | | | | | | | | | | | | | | | |
| | 132 | | | | | | | | | | | | | | | | | | | | 30,5 | 26 | | 21 | | 17 | | 13 | | | | | | | | | | | | | | | |
| | 140 | | | | | | | | | | | | | | | | | | | | | 30 | | 25 | | 20 | 17 | | 14 | | | | | | | | | | | | | | |
| | 150 | | | | | | | | | | | | | | | | | | | | | | 35 | | | 27,5 | | 22 | | | 16 | | 12,5 | | | | | | | | | | |
| | 160 | | | | | | | | | | | | | | | | | | | | | | | 35 | | 30 | | 24 | | 19 | | | 14 | | | | | | | | | | |
| | 170 | | | | | | | | | | | | | | | | | | | | | | | | 35 | | 30 | | 26 | | | 20 | | 15 | | | | | | | | | |
| | 180 | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | 34 | | | 27,5 | | | 20 | | 15 | | | | | | | |
| | 190 | | | | | | | | | | | | | | | | | | | | | | | | | | 42 | | | 36 | | | 29 | | 20 | | 15 | | | | | | |
| | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | | | 35 | | 30 | | 25 | | 20 | | | |
| | 212 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 43,5 | 41 | | | 31 | | 21 | | | | | |
| | 224 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 46 | 42 | | 32 | 27,5 | 22 | | | | |
| | 236 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | 43 | | 33 | | | 23 | | |
| | 240 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 35 | | | | 25 | | |
| 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32 | | 25 | | |



The Tubacex Group offers the main dimensions of mechanical tubes according to EN 10294-2, in a wide range of combinations of OD/ID.

In the manufacture of cylindrical tools or hollow stainless steel parts, the cost of machining the bore is greatly reduced when hollow bar is used as basic material. Chip loss is substantially lower than if solid bar is used. A wide range of hollow parts can be processed from hollow bar, as liners, feed bushes, shearing cylinders, cutting rings, fittings, pumps, flange rings and hollow axles.

The Tubacex Group supplies mechanically bored tubes through IBF. Located in Vittuone, Italy, IBF pipes division manufactures mechanically bored tubes up to 72" in any wall thickness.

Big Outside Diameter Seamless Pipes and Tubes

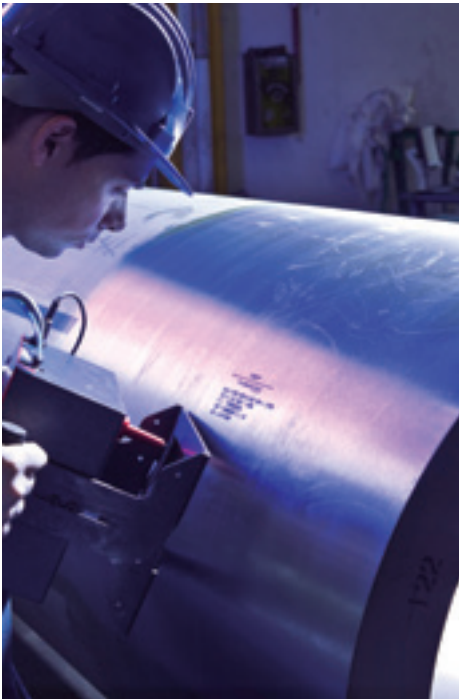
Growing sizes in both outside diameter and wall thickness are a clear trend in almost all seamless pipe demanding industries (oil and gas, refining and petrochemical, power generation). Starting either from forged round bars (rough or machined) or from hollow forging (heat treated or as forged) Tubacex offers a wide manufacturing range through trepanning technology:

| MANUFACTURING RANGE | |
|---------------------------|------------------|
| Trepanned Pipes | Outside Diameter |
| From round bar | 1/2" - 26" |
| From hollow bar | 22" - 72" |
| Seamless heavy wall pipes | |
| Any thickness | |
| Lengths up to 20 meter | |



Materials covered include a wide range of grades, from carbon steel to titanium, with focus in stainless steel and high nickel alloys:

| GRADE RANGE - BIG OUTSIDE DIAMETER SEAMLESS PIPES AND TUBES | |
|---|---|
| Carbon steels | ASTM A105, A106, A333... |
| Carbon steels with high yield limit | X52- X60-X65 in conformity with the standards A864, A860, MSS-SP-75, API 5L... |
| Low alloy steels | ASTM A182, A234, A335 grade F/WP/P1, 5, 11,12, 22, 91, 92, 122... |
| Austenitic stainless steels | Standardaustenitic (304,316,321, 347 series...) and superaustenitic steels (UNS S31254,UNS S34565...) |
| Martensitic and ferritic stainless steels | 400 Series: 410... |
| Ferritic-austenitic stainless steels | 22% Cr Duplex (UNS S31803, S32205); 25% Cr Super Duplex (UNS S32760, S32750, S32550) |
| Nickel and nickel alloys | Inconel (N06625, N06600...); Incoloy (N08825, N0800H) |
| Titanium alloys | |



Fittings and Special Components



The Tubacex range includes the design and manufacturing of butt welding fittings, tube bends, elbows, tees, reducers and caps (both seamless and welded), complementing the wide offer of tubular solutions, by IBF and TTA companies. In addition, IBF offers a wide range of special parts (manifolds, laterals, special reducers...)

- TTA size range goes from 1 ½" to 14" NPS, in short and long radius as well as special radii. Located in Artziniega, Spain, Tubacex Taylor Accesorios (TTA) manufactures fittings (elbows and return bends) mainly for the petrochemical industry, perfectly complementing the portfolio of the rest of the Group and particularly the seamless tubes for furnace applications, heaters and re-heaters.
- Located in San Niccolo, Italy, IBF fittings and special parts division manufactures fittings, elbows, and special components in a manufacturing range that goes from ½ "to 72" NPS for a wide range of end users (Oil and Gas, Power Gen, Nuclear...). Specialized in special and big size pieces, cold drawn dimensions are mainly sourced from its participated company CFF.
- Located in Amphur Muang-Samutprakarn, Thailand, Awaji Stainless manufactures stainless fittings (seamless and welded) in austenitic grades from 1/2" to 12" in both ASTM and JIS standards.

The Tubacex Group’s fitting and special components extensive production program is suitable for all kinds of projects. The range offered is one of the widest in the industry:

| MANUFACTURING RANGE - FITTINGS AND SPECIAL PARTS | |
|--|--------------|
| Seamless | 1/2" ton 44" |
| Welded | 1/2" ton 72" |

Hot drawing, bending and cold drawing processes
Any thickness
Lengths from 0,5 to 20 meter

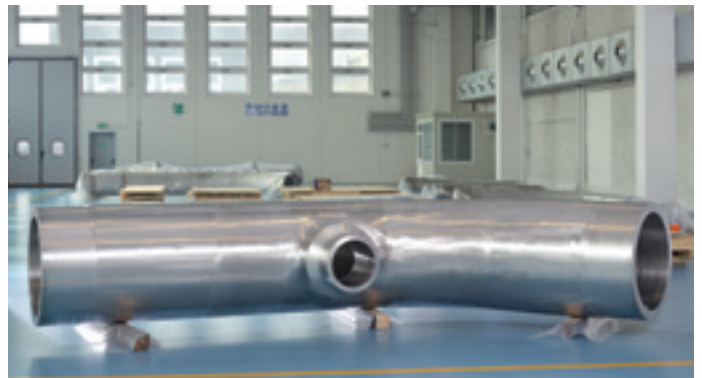
Materials covered include a wide range of grades, from carbon steel to titanium, with focus in Stainless Steel and High Nickel Alloys – same as described regarding trepanned pipes. The Tubacex Group maintains a very high stock level in finished and semifinished products, as well as base materials, to provide full flexibility and a extremely competitive lead time.



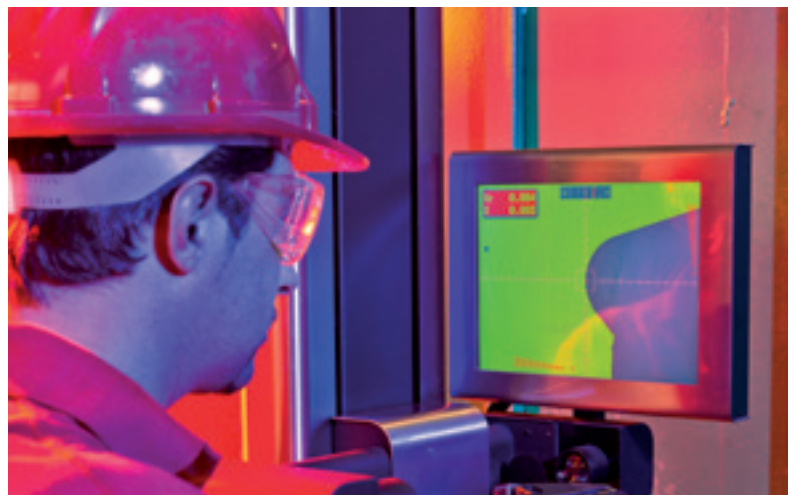
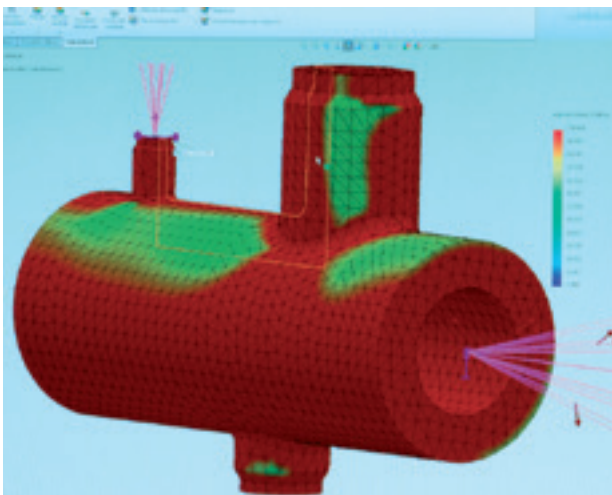
Product portfolio

- The Tubacex Group's Fittings program covers all kind of fittings (Butt welding fittings & elbows, tees, reducers, caps) from standard to special products, manufactured by hot drawing, bending or cold drawing.
- In addition to fittings, special components such as laterals, manifolds, tees, stress joints, weldolets are manufactured at IBF fittings and special parts division, with a clear trend to a more particularized design.

| FITTINGS | SPECIAL PARTS |
|--------------------------------|--------------------|
| Butt Welding fittings & elbows | Special components |
| Tees | Manifolds |
| Reducers | Laterals |
| 3D / 5D Bends / Stress Joints | Special Reducers |



- Flexible production processes allow The Tubacex Group's products to be manufactured by a variety of production methods, to reach a wide range in a specialized market, where particularized designs are growingly demanded – designs defined and calculated by our engineering departments.
- IBF has a technical department equipped with CAD systems for design and calculation. This department designs fittings and special items in compliance with all applicable standards and specifications and in conjunction with the client's specific requirements. In addition, the department offers support to the development of all necessary production equipment, machinery and technical processes.



Innovation

The Tubacex Group's Vision remarks the aspiration of becoming a global supplier, benchmark in the development of innovative tubular solutions in advanced materials. Creativity and Innovation, along with customer satisfaction, are the values behind this vision.

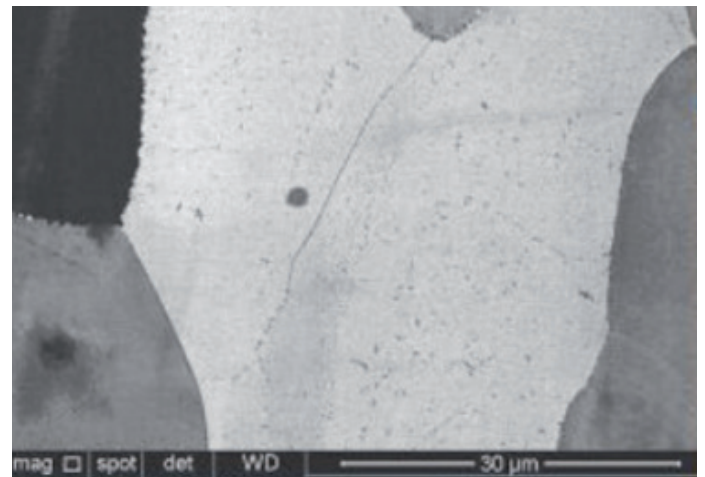
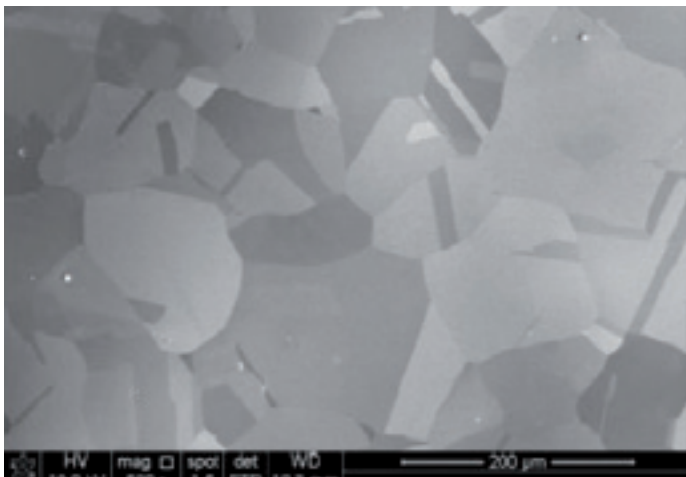


The Tubacex Group has made a significant effort in innovation in recent years, which is constantly being reflected in results and in the sales figure.

The Group has a corporate innovation unit called Tubacex Innovación, with human and technical resources devoted exclusively to innovation activities, consisting of product R&D projects and development projects for the different industrial plans of the Group's companies, in which technological development is required.

Tubacex Innovation

- Steel Portfolio Management
- R&D Projects Management
- New Products Development
- Known grades. Performance Improvement. New requirements
- Participation in Industrialization Projects
- Participation in Continuous Improvement Projects
- Investigation and analysis of Metallurgical claims
- Heat treatments design
- Group Laboratories Standarization
- Technical support to Sales and Engineering
- Customers Assistance



Important approvals with potential customers have also been obtained, which will enable sales of high value-added products to increase in the future. Since 2008, and more notably in the past two years, we have entered all of the strategic sectors that were defined as targets, namely: OCTG, umbilical offshore tubes, ultra supercritical boilers and recently, fertilizers. This has been possible thanks not only to R&D activities, but also to significant investment in recent years, in excess of €150M, and the improved processes in all of the Group's plants.

A milestone in 2014 was the opening of a new laboratory specifically devoted to R&D, which is located in the Zamudio Scientific and Technology Park (Bizkaia). This new laboratory will accelerate the development of the R&D unit, in skills such as metallurgical and metallographic knowledge, which is key for the development of new materials and processes. The creation of the new laboratory will act as a base for the future growth of the R&D capacities of the Tubacex Group, enabling closer collaboration with customers in the development of new solutions for the energy sector.

Service is the other main driver of the Tubacex Group's vision. This means excellent service in the existing portfolio, along with the development of new value added services that can complement and enrich the Tubacex Group's product portfolio.

Service

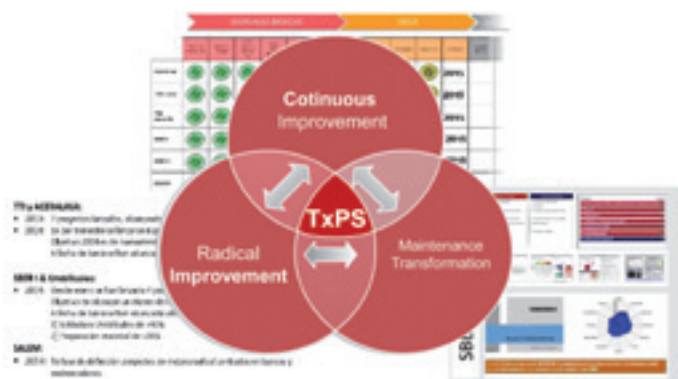


Excellent service in the existing portfolio - Tubacex Production System

TxPS, the acronym of Tubacex Production System, is the standard Management System for the entire Tubacex Group focused on:

- Implementing an continuous improvement system in all areas
- Involving all personnel from all areas
- Ensuring that the improvements are sustained over time

TxPS is based on action on three levels: yearly management plan, daily management and specific action for radical improvement.



New Services to develop and complete our offer - Tubacex Services

To further increase our service capabilities we are developing final added value operations for small niches:

- Final treatments
- Special packages
- Others

The Group has developed a new unit called Tubacex Services, with resources devoted exclusively to the development of those added value operations to the Group's portfolio. This unit is already developing specialized process as Shot peening in a new mill in Santander (north of Spain).



Global Service Center Network - Tubacex Service Solutions

In addition, the group network of service centers in Europe, America and Asia offers availability and proximity service to our customers through Tubacex Service Solutions service centers (Spain, France, Austria, the United States, Brazil, China, India, Dubai and Iran).



Quality and Approvals

The Tubacex Group holds several approvals as a manufacturer of seamless tube and pipe, and can deliver tubular products in accordance with most international standards.

MANUFACTURING STANDARDS

Apart from standards mentioned in the catalogue we also manufacture according to UNE, BS, SIS, GOST, JIS and other international standards and steel grades.

MANAGEMENT SYSTEM CERTIFICATES

ISO 9001.

API Q1.

ENVIRONMENTAL RESPONSABILITY

The Tubacex Group is highly engaged with the environment and it is ISO 14001 certified.

SAFETY

Occupational Health and Safety is also a key element of our culture. The company is OHSAS 18.001 certified.

APPROVALS

Tubacex is approved to manufacture according to TÜV, Lloyd's register, DNV, Germanischer Lloyd's, BV, Norsok etc. Complete list of approvals is available upon request.

OTHER CERTIFICATIONS

Tüv Süddeutschland (Ad - Merkblatt Wo / Trd 100)

Lloyd's Register of Shipping (rules for the manufacture, testing and certification of materials)

Qualification as Manufacturer of Special Materials to Norsok M-650

ASME Quality System Certificate as Material Organization for Ferrous and Nonferrous Material

Tüv Süddeutschland (Pressure Equipment Directive 97/23Ec)

Det Norske Veritas (Dnv's Rules for Classification Pt.2)

Germanischer Lloyd (Austenitic Stainless Steel Pipes and Tubes According to En 10216-5 or Equivalent Standards)

PED 97/23/EC.

AD2000, werkblatt W0.

JIS Mark scheme

Complete list of approvals and certifications is available on request.



MANAGEMENT SYSTEM CERTIFICATES

UNE - EN - ISO 9001:2000
ER-0006/1991



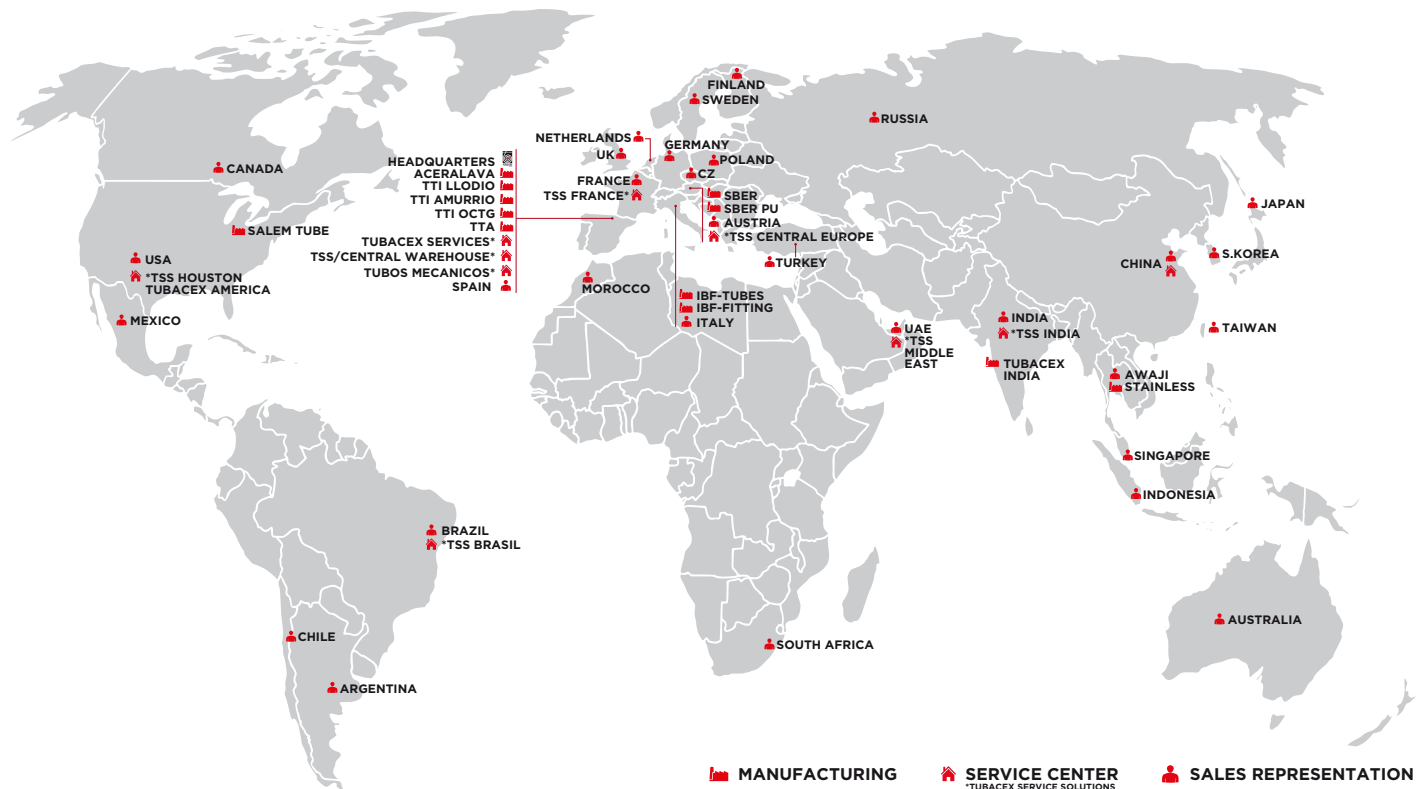
OHSAS 18001:1999



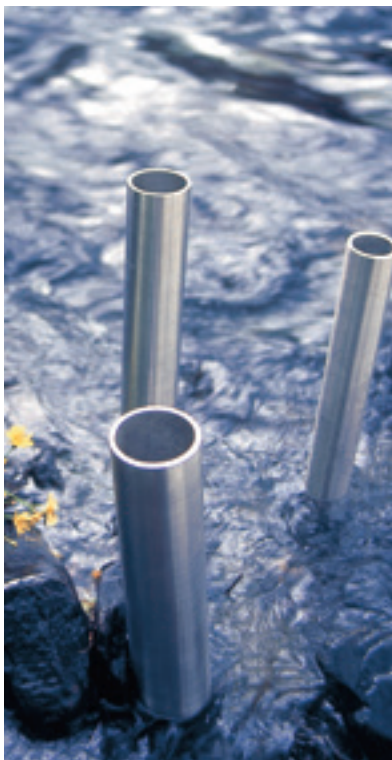
UNE - EN - ISO
14001:1996
GA-2001/0127



Tubacex Around The World



Currently the Tubacex Group is exporting into more than 100 countries worldwide from its manufacturing sites and warehouses. The company has 15 commercial offices and a wide network of agents in several countries that lead to a global presence.



MANUFACTURING COMPANIES

Acería de Álava, S.A.
STEEL MELTING SHOP
Amurrio. SPAIN

Tubacex Tubos Inoxidables, S.A.
HOT EXTRUSION PLANT
Llodio. SPAIN
COLD FINISHING PLANT
OCTG FINISHING PLANT
Amurrio. SPAIN

Schoeller Bleckmann Edelstahlrohr, GmbH
COLD FINISHING PLANT
HOT EXTRUSION PLANT
SPECIAL TUBE PLANT
Ternitz. AUSTRIA

Salem Tube, Inc.
COLD FINISHING PLANT
Greenville. PA. USA

IBF, S.p.a.
TUBES DIVISION
Vituone - Milano. ITALY
FITINGS DIVISION
San Nicolò - Piacenza. ITALY

Tubacex Prakash
COLD FINISHING PLANT
Umbergaon - Gujarat. INDIA

Tubacex Awaji
STAINLESS FITTINGS
Amphur Muang-Samutprakarn.
THAILAND

Tubacex Taylor Accesorios, S.A.
BUTT WELDING FITTINGS
Arzeniega. SPAIN

Tubacex Services, S.L.
TUBE FINISHING SERVICES
Santander. SPAIN

SERVICE & DISTRIBUTION COMPANIES

Tubacex Service Solutions, S.A.
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Amurrio. SPAIN

Tubacex America, Inc. / TSS Houston
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Houston. UNITED STATES

Metaux Inox Services, S.A.S. / TSS France
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Satolas & Bonce. FRANCE

Tubos Mecánicos, S.A.
CARBON & ALLOYED MECHANICAL
TUBING DISTRIBUTION
Barcelona. SPAIN

TSS Central Europe
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Ternitz. AUSTRIA

TSS Brasil
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Sao Paulo. BRAZIL

TSS India
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Gandhidham. INDIA

TSS Middle East
STAINLESS STEEL LONG PRODUCTS
DISTRIBUTION
Dubai. UAE

Tubacex Upstream Technologies
OCTG Premium solutions
Leioa. SPAIN



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