Technology Analysis and Calculation of 25×2 mm Sized Pipes Production at PJSC Centravis Production Ukraine

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The National Metallurgical Academy of Ukraine

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Centravis Profile

Product portfolio

- General tubes & pipes;
- Instrumentation tubes;
- Boiler tubes;
- Furnace tubes;
- Hollow bars;
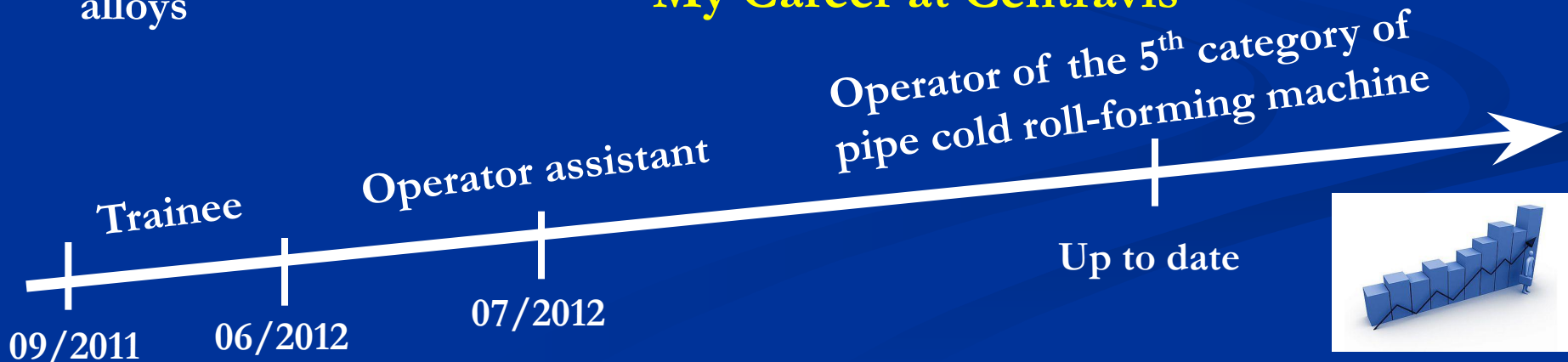- Heat exchanger tubes;
- Nickel-based alloys

Sales Breakdown by segment

- General tubes and pipes – 44%
- Heat exchanger tubes – 20%
- Hollow bars – 14%
- Instrumentation tubing – 10%
- Boiler tubes – 10%
- Furnace tubes – 2%

Sales Breakdown by geographic area

- EU countries – 56%
- CIS countries – 34%
- North America – 6%
- Other countries – 4%

My Career at Centravis

Operator of the 5th category of pipe cold roll-forming machine

Operator assistant

Trainee

09/2011   06/2012   07/2012   Up to date

Key Stages of Research

- Analysis of product range of the mill.
- Analysis of HPT-55's equipment and pipes manufacturing process.
- Justification of rational technology and facilities in process of product manufacturing.
- Calculating the calibration of HPT-55's working tool.
- Calculation of strength and elastic deformation of stand's parts.

Analysis of Product Range of the Mill

Features:
Diameter: 38 - 79 mm Hollow
25 - 55 mm Rolled
Thickness: 3 - 12 mm Hollow
1.5 - 8.5mm Rolled

$D_T \times S_T = 25 \times 2$ mm sized pipe from the core range was chosen for the research.
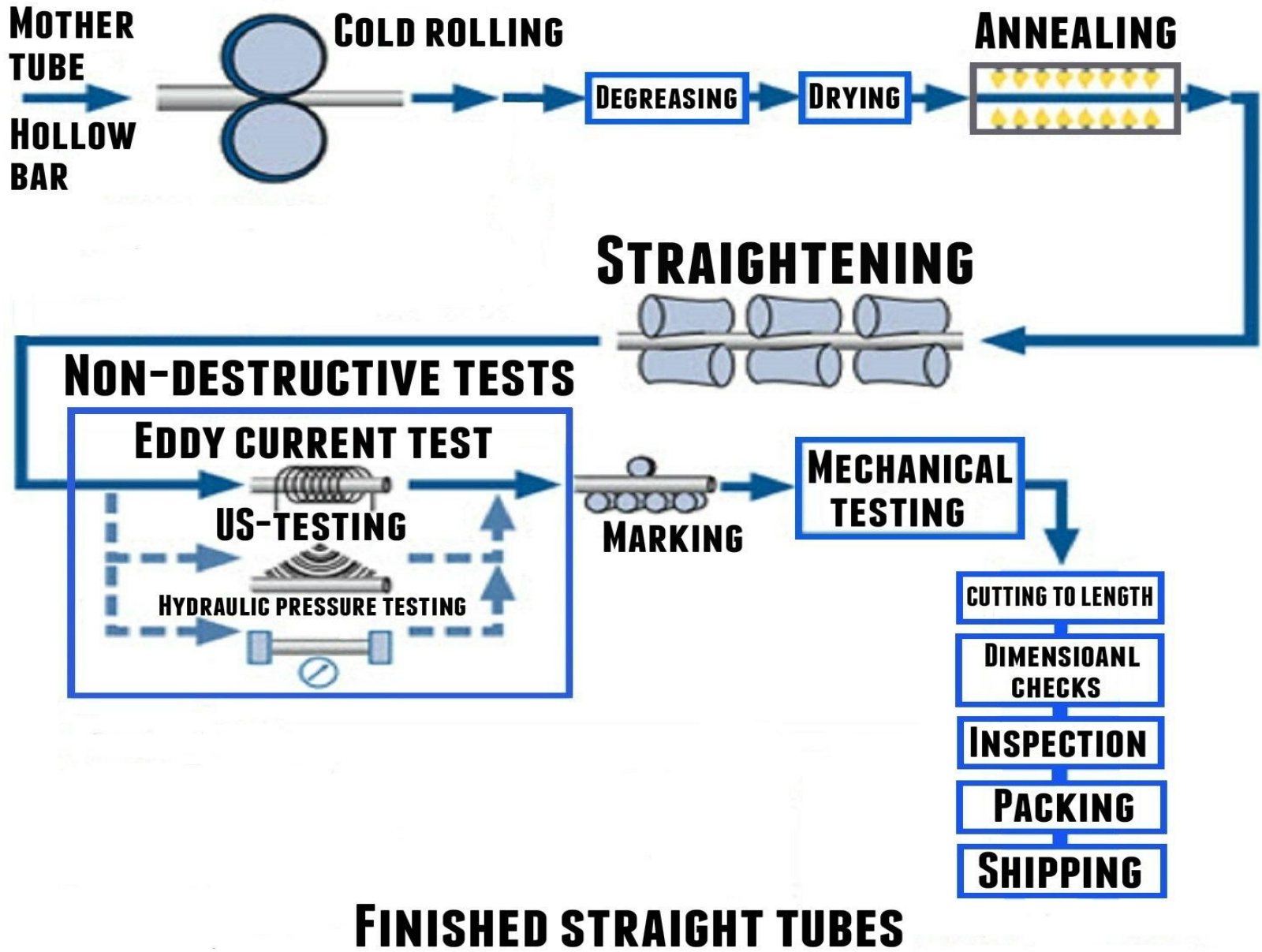
It is manufactured out of steel 12X18H10T in accordance with GOST 5632-72.
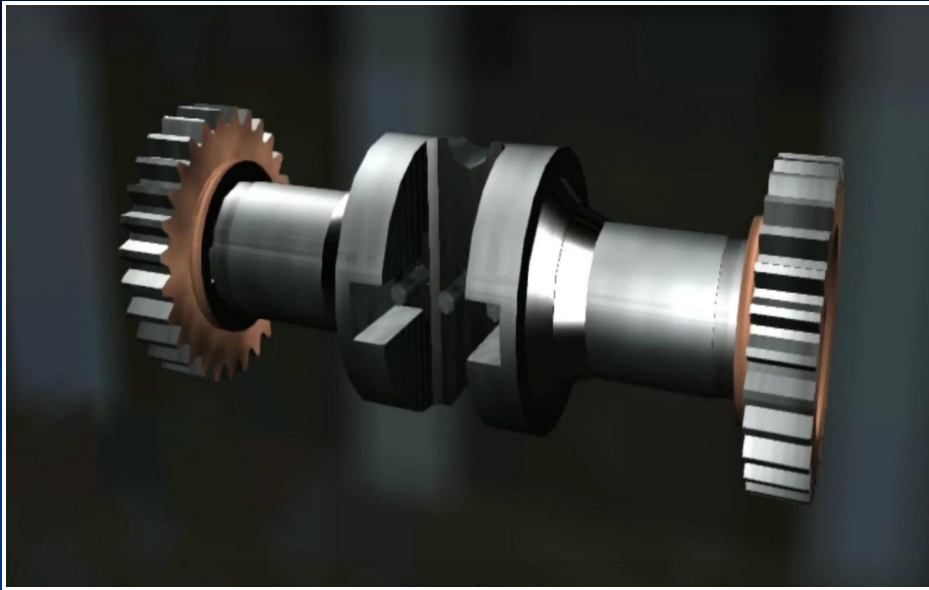
Calculation of rolling route

Output data:
- dimensions of workpiece:
  $D_3 \times S_3 = 57 \times 4$ mm
- dimensions of finished pipe:
  $D_T \times S_T = 25 \times 2$ mm
- steel grade: 12X18H10T

Calculation of strength and elastic deformation of stand's parts

The strength of roller is calculated in three crosscuts. The following results are obtained based on calculations:

$$\partial_{I-I} = 1395 \, {}^{N}\!/_{sm^2}$$

$$\partial_{II-II} = 1878 \, {}^{N}\!/_{sm^2}$$

$$\partial_{III-III} = 3391 \, {}^{N}\!/_{sm^2}$$

The obtained results do not exceed the allowable tension:

$$\partial_{I-I} = 1395 \, {}^{N}\!/_{sm^2}$$
$$\partial_{II-II} = 1878 \, {}^{N}\!/_{sm^2}$$

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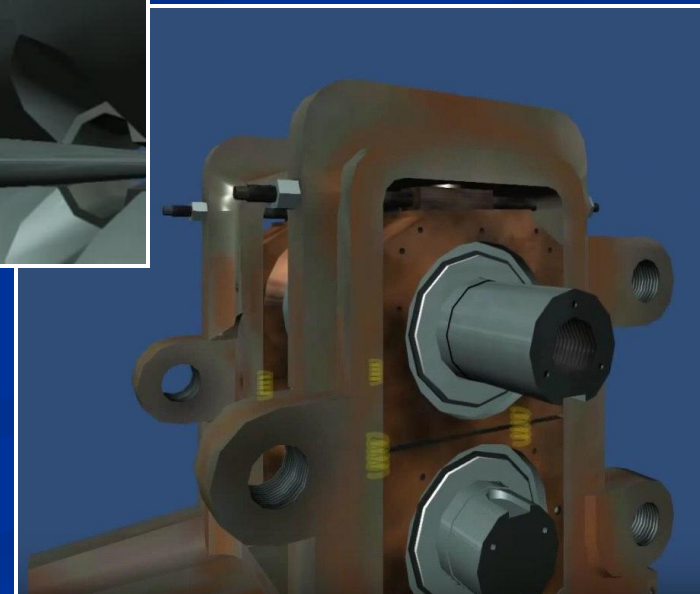
Thank you for your attention!