

**Technical Specification
for
Assel Mill Rolling Line**

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Annex 1

General Description

Annex 1

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1. **SCOPE OF THE PROJECT**

Thanh Nam is planning to erect a new Assel Mill Rolling Line.

Within the new Assel rolling mill rolling line, one new Cone type piercer, one new Assel mill and one new sizing mill will be installed.

The purpose of the present specification is to define the most suitable technical solution for the erection of the new Assel rolling line.

2. **TUBE REFERENCE PRODUCT MIX (PRELIMINARY)**

Table 1 shows the considered preliminary product mix.

This product mix represents the following data:

Finished tube diameter:	88.9 to 219.7 mm
Finished tube wall thickness:	5.6 mm to 40.0 mm
Finished tube steel grades:	carbon and low alloyed

Table 1

Advanced Assel Mill
 preliminary, needs to be updated

Rolling Schedule

SM 550 I 10

Dia- meter	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2	16,0	17,5	20,0	22,2	25,4	28,0	30,0 *	32,0 *	35,0 *	40,0 *	
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
88,9																				
101,6																				
108,0																				
114,3																				
121,0																				
127,0																				
133,0																				
139,7																				
141,3																				
146,0																				
152,4																				
159,0																				
168,3																				
177,8																				
180,0																				
193,7																				
194,5																				
203,0																				
219,1																				

Reduction series: A
 Shell diameter: 130 mm
 Total reduction: 31 %
 Reduction per stand: 4.3 %

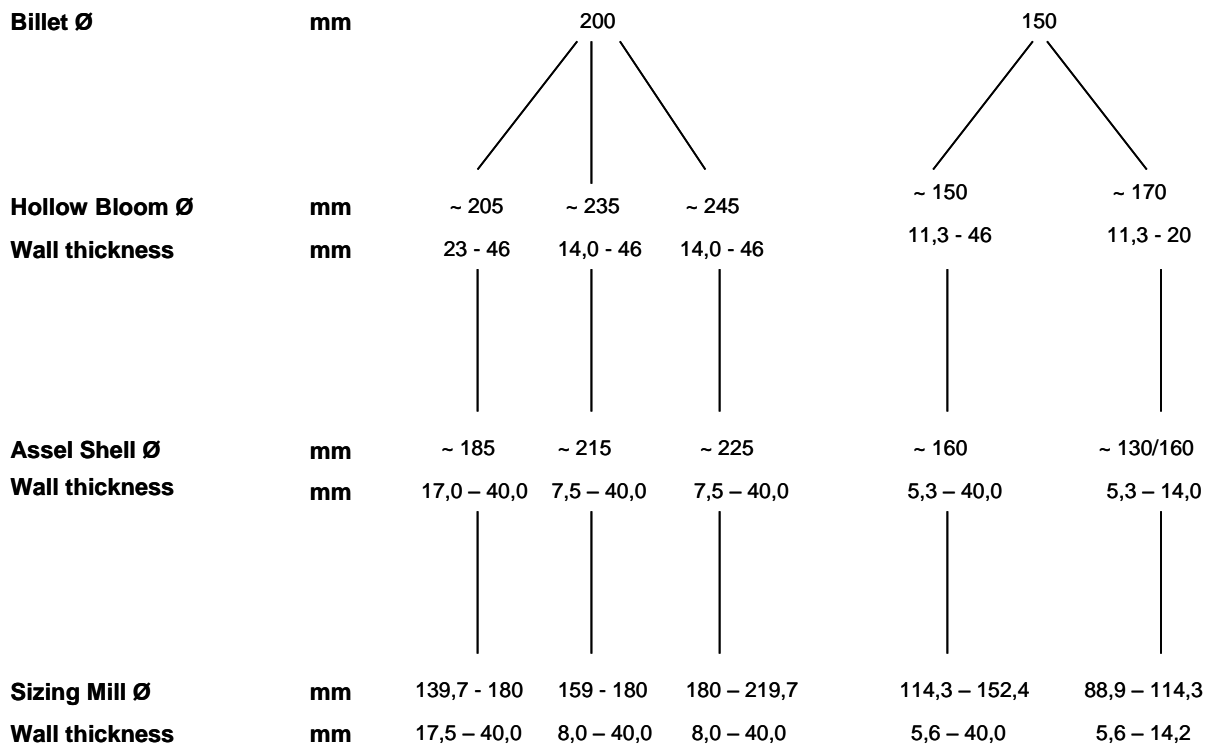
Reduction series: B
 Shell diameter: 160 mm
 Total reduction: 25 %
 Reduction per stand: 3.3 %

Reduction series: C
 Shell diameter: 185 mm
 Total reduction: 23 %
 Reduction per stand: 2.8 %

Reduction series: D
 Shell diameter: 225 mm
 Total reduction: 20 %
 Reduction per stand: 2.4 %

Remark: Tube quality reduced for D/t < 5/1. * - Carbon steel grade only.

3. PRELIMINARY DEFORMATION STEPS*



***Remark:** Forming Steps are preliminary and need to be confirmed later

5. **DESCRIPTION OF THE TECHNOLOGICAL PROCESS FOR TUBE MANUFACTURING**

The feedstock for the hot-rolling line foreseen in this document consists of round billets of 150 and 200 mm outside diameter.

On the cone type piercer the heated billet of max. 1280°C is pierced to a hollow bloom of the size, required for the Assel mill.

Before being rolled on the Assel mill, the hollow bloom will be descaled inside, by means of blowing compressed air into hollow bloom.

The hollow bloom is transferred to the Assel mill by means of a cross transfer device.

The hollow bloom is rolled on the Assel mill to the required wall thickness and outside diameter.

Before final tube rolling on the Sizing Mill, the mother shell is descaled by passing high pressure water descaling equipment.

The Sizing Mill consists of 10 stands with the main purpose to roll the mother shell coming from the Assel Mill to finished tube sizes.

5. LAYOUT

On the following page you will find a preliminary Layout, which shows the typical arrangement of the Assel rolling line. The Layout shows the relevant components

Rotary Hearth Furnace

Cone-Type Piercer

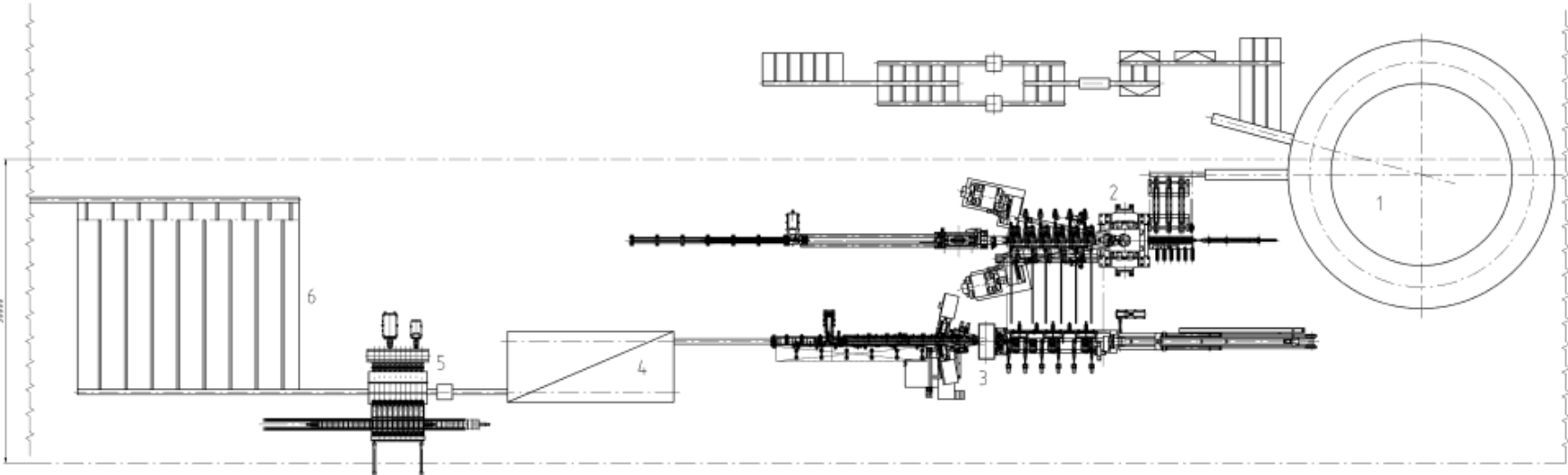
Assel Mill

Reheating Furnace

Sizing Mill

Stretch Reducing Mill

Cooling Bed



- 1 Rotary Hearth Furnace
- 2 Cone-type piercer
- 3 Assel Mill
- 4 Preheating Furnace
- 5 Sizing Mill
- 6 Cooling Bed

Fertigungszeichnung Manufacturing instruction SW 200		Zeichnung / Single 901152 1/1	Fertigungsart / Production method 10 10	Zeichnung / Drawing 10 10
Blatt / Sheet 1 1	Gesamtzahl der Blätter / Total number of sheets 1 1	Name / Name Dr. Preiser Dr. Preiser Dr. Preiser Dr. Preiser	Teil / Part 10 10	Maßstab / Scale 1:200 1:200
Layout Proposal for Advanced Assel Mill Plant				
Projekt / Project 9901752-00.105		Zeichnung / Drawing 10 10		
Zeichnung / Drawing 10 10		Zeichnung / Drawing 10 10		

