



BACKGROUND

Due to high production rate Tikhvin Freight Car Building Plant decided to invest in robotized and manual blast chambers for freight car blast cleaning.

After production started in 2012 they soon discovered benefits of automated blast cleaning and manual chamber was also equipped with Blastman robots in 2013.

Originally manual chamber was designed to be suitable for robotics blast cleaning as well.

Tikhvin Freight Car Building Plant is considered to be one of the most large-scale objects in the European machine building industry on the amount of investment, production facilities and high-technology capacity.

OBJECTIVES

The requirement was to blast clean completely exterior and interior surfaces of various freight cars with given speed.

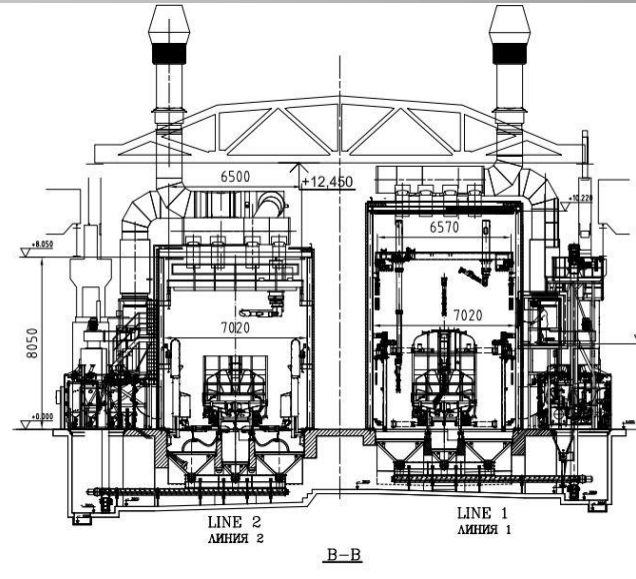
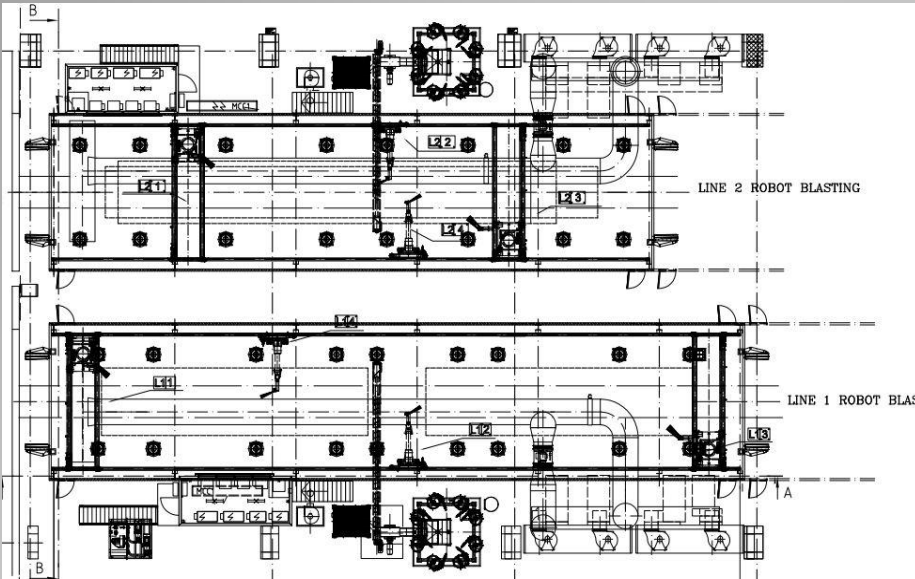
Factory target production is 13 000 freight cars annually.



BLAST CLEANING OF RAILWAY FREIGHT CARS

Advantages of Automated Blast Cleaning

- considerable savings in production costs
- increased production capacity
- remarkable health and safety implications
- freedom to use any abrasive material
- desired surface cleanliness and roughness
- slight surface shaping by controlling the blast pressure
- working lifts and platforms not needed
- increased fatigue strength of specific welded joints



Technical Information

Amount of robots	4 robots per chamber
Nozzle diameter	16 mm
Number of nozzles/robot	2
Blasting pressure	8 bar
Blasting rate	400-640 m ² /h

Abrasive	Steel grit
Degrees of freedom	8
Programming	Offline and Point-to-Point
Operation mode	Automatic

SOLUTION

Surface treatment facility consists of two parallel production lines.

Each robot blast room is equipped with two units of Blastman B20 robots and two units of Blastman B16 robots. Each robot arm manipulates two parallel blast nozzles with 16 mm diameter.

The Blastman robots clean both interior and exterior surfaces of various freight cars. Removing of abrasive and occasional manual blasting is done in following cleaning chamber.

Blasting time for freight car is 25-45 minutes, depending on freight car type.

RESULTS

The production capacity rate was reached after optimizing the line operation during production ramp up period. The amount of manual touch up is minimized.

Due to optimized operation of the robots and carefully selected abrasive material (steel grit) the required surface roughness and cleanliness Sa 2 ½ have been achieved.

