

## Summary

**of the dissertation work by PhD doctoral candidate in specialty  
6D071200 “Mechanical engineering”  
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“Improving of effective work of the hot rolling mill thin strips on based  
improving the design of collecting roller table”**

**Actuality:** Given the sharp and often unpredictable changes in the prices of rolled metal products and energy use of innovative technologies in the rolling production can significantly improve production efficiency and thus the competitiveness of producing sheet products.

Research of scientists near and far abroad proved that temperature conditions of rolling on continuous broadband hot rolling mills and cooling on the collecting roller table are the determining factor in producing high-quality rolled steel along the structure, mechanical properties, flatness in polythickness.

Thereby the paramount is the creation of efficient equipment and technologies that reduce energy and labor costs for the production of rolled products, reduce consumption ratios of metal and tools to improve quality and increase the accuracy of rolled sheets.

The solution of these issues in many ways depends on the reliability work of the abducent of roller table. Abducent roller tables are included to set of rolling equipment and are the quite difficult aggregates, consisting of a plurality of roller with an individually driven. As practice shows, exactly their work causes most of emergency stops of the mill. It results in the decline of the productivity of rolling, worsening of quality parameters of the sheet. Thereby perfection of the construction of the abducent roller table, aimed to upgrading of sheets rolling is an actual task. On the basis of the above-mentioned there was formulated the work purpose.

**The purpose of the work** is upgrading the quality of hot-rolled sheets and reduction of wear of rollers by elaborate new constructions of the abducent roller table.

**The object and subject of study.** The object of research is construction and technology of a forced cooling of hot-rolled carbon steel sheet of abducent roller table to new construction.

**In connection with the defined purpose there were formulated the following tasks of the study:**

- To develop construction of new abducent roller tables providing reception hot-rolled strips of high quality and substantiation of rational design and strength characteristics of new abducent roller tables;

- Improving the methods of physical modeling in terms forming of structures, carbon steels during the hot fractional deformation and subsequently water-air cooling applied to the terms of longitudinally v-mill of abducent roller tables of new construction;

- Physical modelling research of the basic laws of formation of structures of sheets of water-air cooling hot-rolled sheets on new abducent roller tables.

**The work scientific novelty consists in:**

- there was obtained quantitative data and established basic laws of variation of the intense-deformed condition and strength characteristics of basic elements new abducent roller tables;

- there was developed design procedure of the characteristics of the auxiliary fans providing small rise or decrease of weight of a strip at their transportation in the new abducent roller table;

- by physical modelling received laws of formation structures of sheets of water-air cooling hot-rolled sheets on new abducent roller tables.

**Practical value of the work:**

- based on the results developed a new design of abducent roller table and improved cooling mode of carbon steels which would produce the desired quality of product;

**Scientific provisions to be defined:**

- Quantitative data and basic conformities of variation of the tension-deformed condition and strength characteristics of basic elements new abducent roller table;

- Design procedure of the characteristics of the auxiliary fans providing small rise or decrease of weight of a strip at their transportation in the new abducent roller table;

- Laws of formation structures of sheets of water-air cooling hot-rolled sheets on new abducent roller tables;

**Testing results:** Scientific and technological positions of dissertation work were reported and discussed on: International scientific conference "Innovative technologies, equipment and materials in engineering"(Almaty,2012), International scientific - practical conference "Training of engineers in the context of XXI century global challenges" Almaty, 2013), International Forum "Engineering Education and science in the next XXI century: challenges and perspectives"(Almaty,2014), International conference "Role and position of young scientists in implementation Kazakhstan's New Economic Policy" (Almaty,2015).

**Volume and structure of the dissertation:** The dissertation is stated on 144. pages of the typewritten text, consists of an introduction, four chapters and the conclusion 48 Picture 4 Tables and the list of used references.