

UTILIZATION OF VIRTUAL REALITY IN DESIGNING A NEW WORKPLACE OF ASSEMBLY OF 1ST BRAKE

Client: TATRAVAGONKA A.S.

Focus: Manufacture of freight train wagon and bogies

**Place of implementation: TATRAVAGONKA a.s.
Poprad, Slovakia**

TATRAVAGONKA a. s. is a Slovakia-based company focused on the manufacture of railway wagons with an average annual production of around 4,000 freight wagons and 10,000 bogies. However, the company is also engaged in the production of welded structures for passenger wagons.

“Our company needed to invest in technological change due to the increasing complexity of our production. However, we would not have been able to achieve this without the Digital Factory tools. We were able to decide for the best solution using dynamic simulation and verification of solution designs in a virtual reality environment. It was one of several investments in our plant and we are glad that we were able to achieve the expected goal in a short time and within the given space.”

Juraj Hudac, CEO, TATRAVAGONKA a.s.

**EFFICIENT ONSET
OF PRODUCTION OF COMPONENTS
IN NEWLY-DESIGNED ASSEMBLY
WORKPLACES**



Project objective - solution prior to implementation

Streamlining assembly processes and investing in new technologies due to the increasing complexity of wagon manufacture. Designing a solution in the Digital Enterprise environment with the help of dynamic simulation, all of that prior to starting the actual implementation of the project.

Steps taken and project outcomes

- Proposal of variants of the 1st brake assembly layout with a detailed design of individual elements of the workplace and taking into account the principles of ergonomics
- Proposal of several variants of assembly activities cycle setup for individual operators taking into account individual limitations and overlapping times
- Verification of the proposed versions of assigning activities to operators was carried out directly at the company's workplace after the implementation of the design
- Definition of a complete list of workplace equipment
- Recalculations and evaluation of legislative requirements for manual handling of loads
- Identification of waste and bottlenecks
- Proposal of a logistics route for supply. Supermarket design to pick material for assembly workplaces in accordance with the lean logistics principles

Benefits of the proposal

- Effective onset of the component manufacture at newly-designed assembly workplaces
- Floor space saving in relation to the removal of unnecessary elements of workplaces
- Consideration of the principles of ergonomics already in the process of workplace design
- Elimination of waste in connection with unnecessary moves within the workplace
- Design of new assembly workplaces with verification of capacity and space requirements in the Digital factory environment prior to the actual implementation phase
- Detection of possible collision states in a detailed variant

Outputs also in virtual reality

The design of the final production layout was preceded by a series of workshops with the TATRAVAGONKA team, where virtual reality was used for a better idea of the designs during the implementation of the project and subsequently also during the final presentation of the output.

Project in numbers:

Reduction of the design time in the digital environment by

15%

Increase of the performance of assembly workplaces by up to

30%

Shortening the cycle time of the paint shop line from

45 to 30 min

Adaptation of the design to sequential material delivery

Project duration

3 months

Designing in a
Digital enterprise
environment allows you to shorten
the onset time of a new system

