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Preliminary design of assembly system and operations for large mechanical products using a game engine

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Abstract

High-end commercially available CAD/PLM systems support virtual simulation of assembly procedures using digital avatars. An advanced solution involves real people in virtual manufacturing environment. This work presents development of a Virtual Reality environment based on an open game engine. This is developed in order to test assembly plans executed on a purpose-designed workstation including specially designed fixtures and all necessary tools for manual assembly of a large centrifugal pump. The system allows the engineer to evaluate and suitably modify the fixtures and overall workstation layout as well as perform preliminary checks on productivity and ergonomics of product assembly before any equipment is built or commissioned. Due to its open nature such a system can further evolve in complexity.

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