



RollResearch International Ltd.

Provider of roll shop technology and
management systems for the roll shops
in the paper and metal industries

Virtual Grinding Machine

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Grinding Machines modernizations

For paper and steel industries



Grinding machine

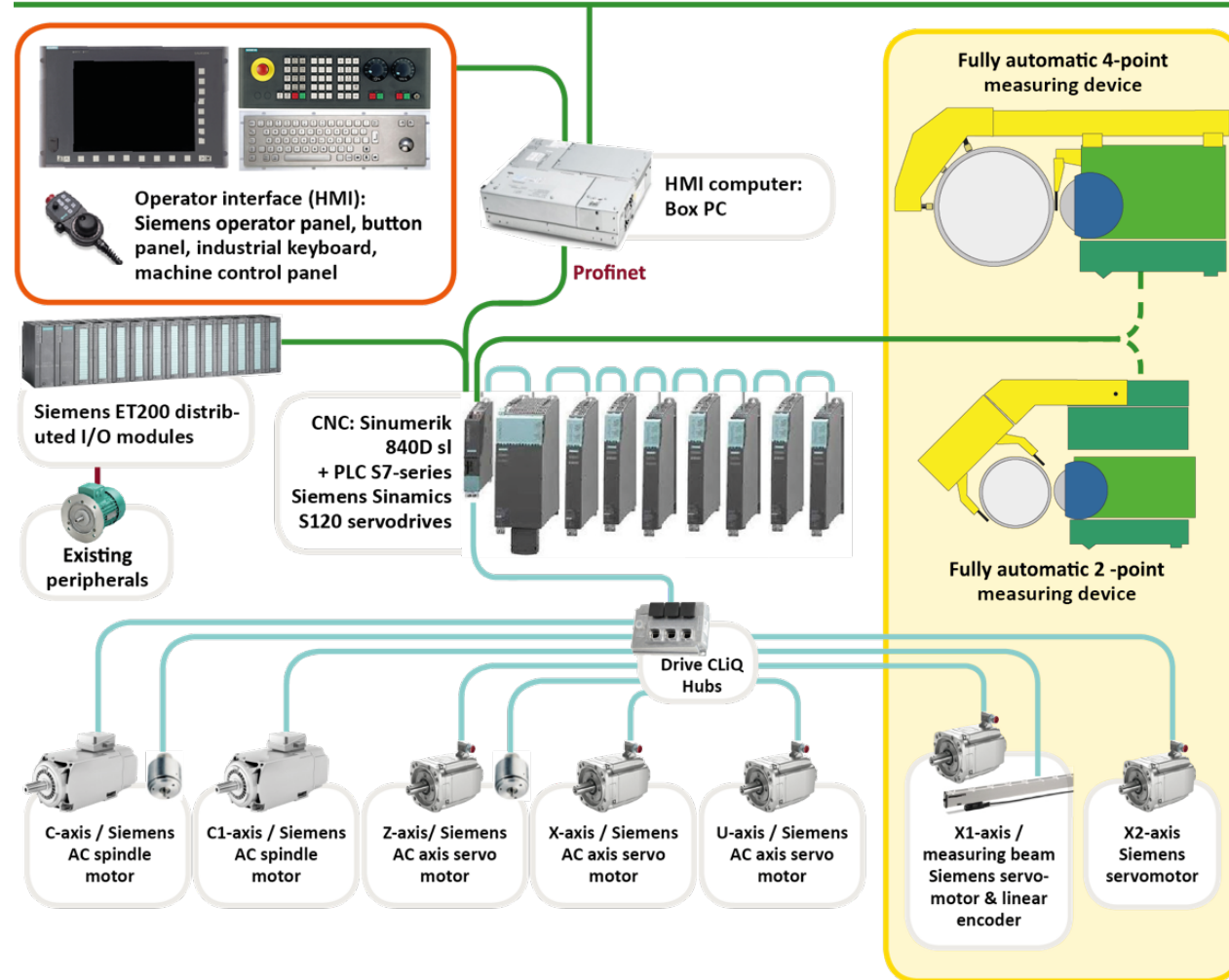


Grinding machine installation and commissioning, on-site



ROLLRESEARCH AUTOMATION LAY-OUT

Factory network



Common modernization projects

- Complete modernization
 - The machine is modernized both mechanically and electrically
 - Old parts are overhauled or replaced with new mechanical parts
 - New devices are added to the grinding machine, e.g., measuring device
 - New electrical cabinets, new motors, new control systems, etc.
 - Control system testing can be done before installation
- Partial modernization
 - Some of the steps from the complete modernization
 - Often some of the old electric components remain in the old electrical cabinets
 - Testing is practically impossible without virtualization before the installation

Virtual Grinding Machine

Digital twin of a real grinding machine

Virtual grinding machine

- At least two possibilities to create a virtual grinding machine
 - Real NC hardware operating in simulation mode with a simulation module to simulate attached hardware, e.g., Siemens Sinumerik 840D and Simit
 - Complete simulation software to simulate the NC and attached hardware, e.g., Siemens Sinumerik One Virtual

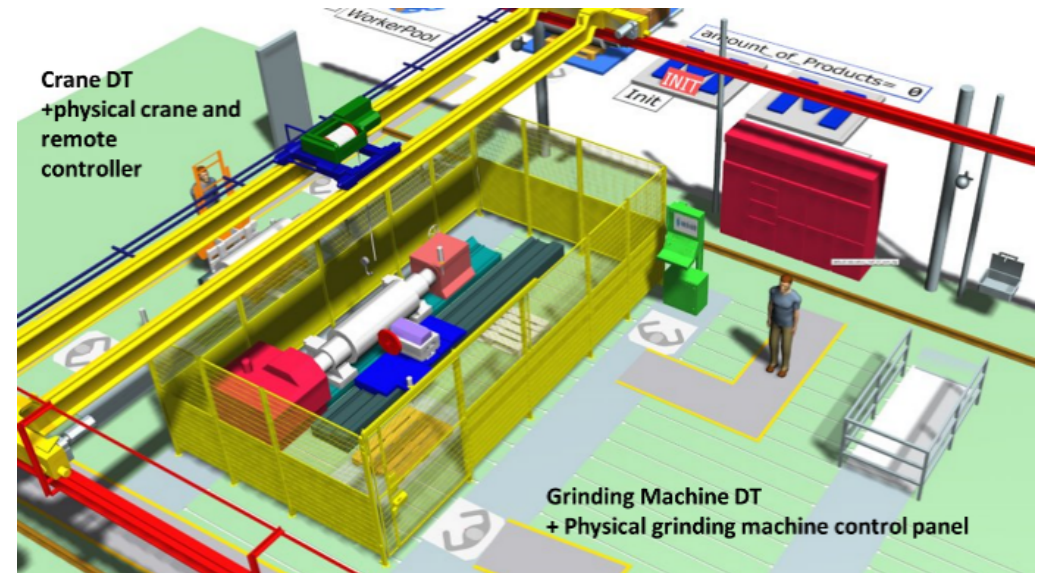


Why virtual grinding machine?

- Speed up commissioning and testing of machines with digital twin
- Create more efficient tools for service

Virtual commissioning and testing

- Testing the programs with the digital twin
- Make kinematic models (requires 3D modelling)
- Find potential weaknesses from the system before installation
- Determine component compatibility



Tools for service

- Create innovative tools for service
- Live monitoring the status of the machines worldwide
- Problem solving with digital twin
- Using data to create adaptive maintenance programs
- Update the digital twin based on the data collected from real grinding machine

