

SIEMENS



Training Simulator for Gearless Mill Drives

The smart way to get more from your mill

Your challenge: Maximum operations at the bottleneck

The Gearless Mill Drive (GMD) is potentially the most critical bottleneck in the mine production process. Each hour of downtime can result in a heavy financial loss.

The key factor – human skills and experience

In this environment, staff capabilities become mission-critical. Skilled and experienced personnel for the Gearless Mill Drive can be a great benefit to your operation. For any intervention on the GMD during operations or maintenance, it's necessary to have a broad system knowledge base. In the event of a system failure, decisions must be made quickly and under stress. On the other hand, the frequent practice of conducting extensive training sessions only after the system has been started up, not following up with regular refresher training activities, and staff fluctuations serve to continuously erode the skill and experience base present at a mine site. This increases the risk of unplanned downtimes and even of potential damage to the equipment.

The key question – training for sustainable know-how

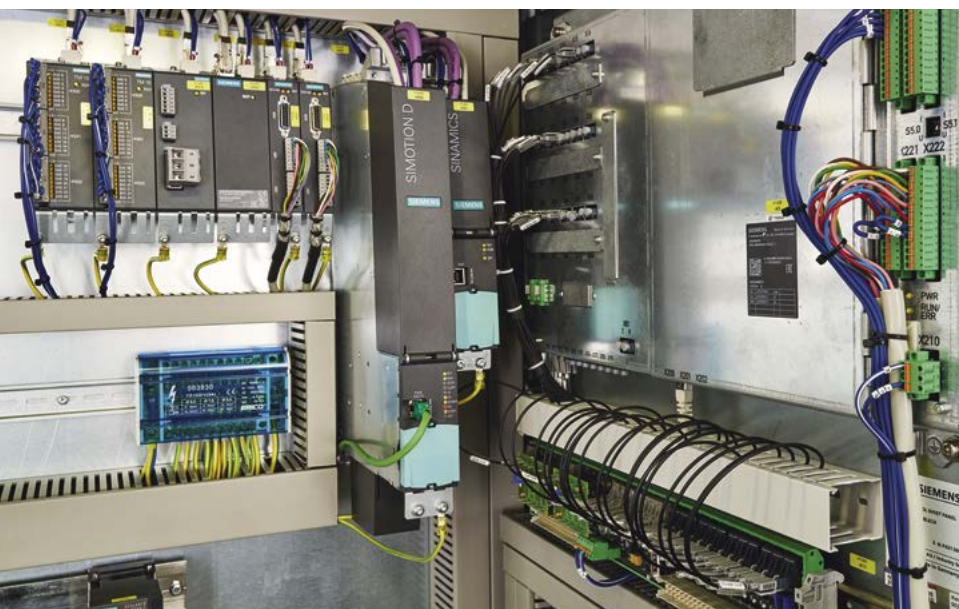
How can all key personnel at the mine become familiar with the GMD and its components in the most efficient and flexible way? How can they build up and retain the sustainable expertise that helps create a safe and efficient operation? How can they learn to deal confidently with unex-

pected faults and improve reaction times in emergencies before they are actually confronted with these situations?

Answering these questions is crucial for reducing shutdown time to a minimum - and for fully leveraging the inherent best-in-class availability of GMDs from Siemens.

You expect ...

- Your operations to run at the highest availability
- Your staff to safely operate the GMD and its component parts
- Your maintenance team to confidently and quickly master any failures
- Your training process to become more efficient and flexible and to generate sustainable know-how



Detail of Training Simulator: drive control section with the SINAMICS controllers and the interface board to power section

Our solution: Simulation like real life

Siemens' Training Simulator provides a smart way to train mine personnel on the complete GMD automation and drive controls – both life-like and safe for operations.

Does anything come closer to reality?

Housed in a compact cubicle, the Training Simulator replicates your GMD system as closely as possible. This includes all of the hardware and software, from the automation and drive control to the power system protection and power distribution systems. Even the speed sensor with a small tachometer disk is integrated. The installed software is also the same version as what's installed on the GMD you're already running – life-like simulation of all operational conditions is ensured by background interventions to simulate missing field signals like temperature sensors in the motor.

A full range – from operations to fault simulations

Your staff can completely simulate GMD operations – from starting and stopping the mill drive to running it in all operational modes. They can also train to program the software and change parameters.

Another factor that has a direct impact on availability is troubleshooting. The Training Simulator provides dedicated pushbuttons to trigger specific faults, so you can simulate the most common failures that occur in a mill. By being challenged with these situations under training conditions, trainees can easily become familiar with all components and systematically develop their troubleshooting skills.

A dedicated training plan covers all operation and maintenance activities and leads participants through each training area with specific exercises for each activity.

“To improve productivity and reaction times in emergency situations, the mining industry is increasingly turning to innovative, practical technologies for training – like simulation applied to real system hardware. Our contribution to this trend is the Training Simulator for GMD.”

Stefano P. Scagliola

Siemens AG,
Senior Sales Manager Minerals



Your benefit: Better skills with no risk to operations

In short, the Training Simulator helps your personnel become experts – with no operational risk. It optimally complements typical classroom training and on-the-job training and speeds up the training process with regular refreshers.

Specific beats generic

It's different from traditional training: The individually configurable Training Simulator mirrors the hardware and software used specifically in your GMD. Your staff can therefore build up the specific knowledge they need for a safe and efficient daily operation.

Any time and anywhere

With the Training Simulator your personnel can get their main training on site and when it makes sense. Especially if you operate a smaller mill or one that's located in a remote zone, this transfers into great flexibility because you don't have to send a large part of your team abroad.

Customization

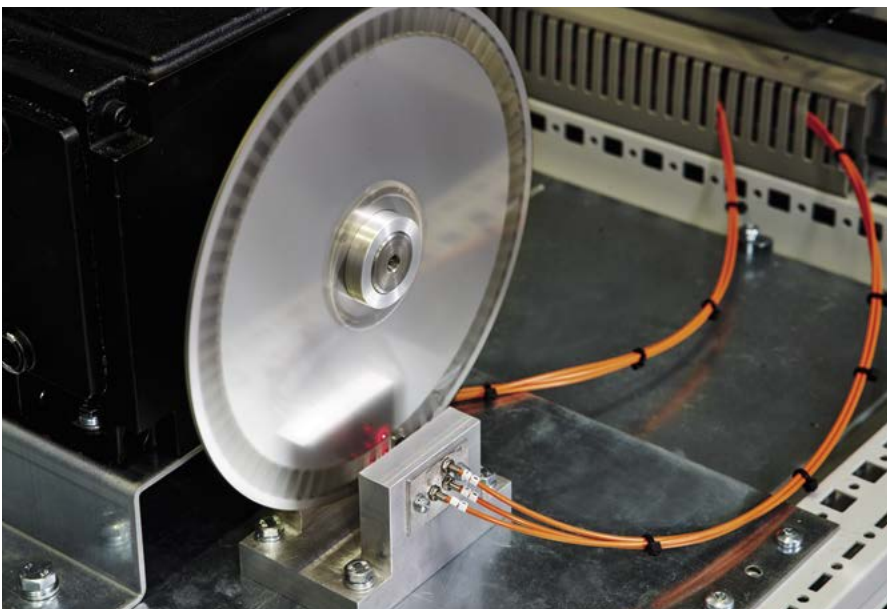
Trainers can individually adapt the content and depth of the training to the trainees' specific knowledge and experience levels. Contents can be repeated until trainees have achieved the required skill and boosted their confidence before moving to the next level of complexity. With the possibility to monitor the training results, a consistent and repeatable training environment allows trainees to demonstrate their skill level and improve their performance.

Real-life but not real-time

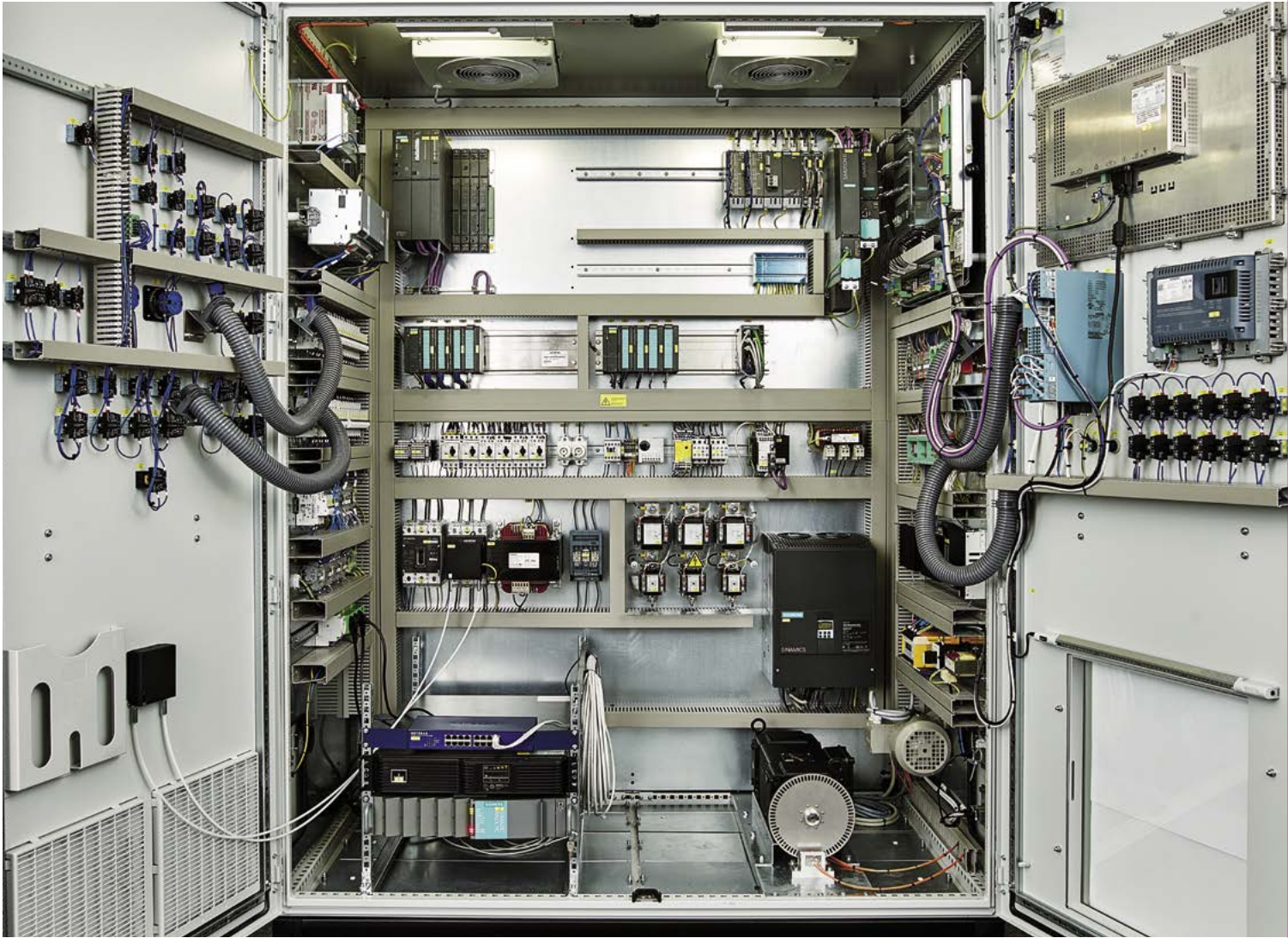
All of the training is conducted in a relaxed offline environment – without the risk of interrupting real-time mill operations. Even experienced operators can take on challenging training levels to further develop their skills.

Activate a hidden spare-part stock

All components installed on the simulator – such as the SIMATIC PLC CPU, the SINAMICS drive controllers, the SIMATIC PCS 7 server, and the drive engineering notebook – can be used as an extra emergency spare-part stock for your system.



Detail of Training Simulator: tachometer with small tacho disk



Your benefits at a glance:

- Increase mill productivity and availability – with trained staff
- Train your people hands-on – with real-life equipment
- Keep all systems running – while operators train themselves on the simulator
- Get new personnel up to speed quickly – without additional investment
- Organize trainings anytime, anywhere - to sustain know-how
- Reduce your emergency spare part stock and simplify resources and shift planning

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