

ROLLING MILL SIMULATOR FOR OPERATOR TRAINING



Practice rolling theory, mill set-up and hands-on mill control without losing production

A real-time mill simulator helps train your future operators and upgrade the skills of your current operators in understanding the principles of mill set-up and controls. It provides a generic rolling mill operating environment through real HMI's with a control console and tests their operating skills to run a cobble free mill. Through learning and comprehensive testing, the operators will gain the knowledge required to achieve high production levels and minimize cobble rate.

Benefits

- ▶ Fast process to get new operators trained
- ▶ Saves money by teaching good rolling practice
- ▶ Help assess operator performance and their understanding of rolling theory and practice
- ▶ Transportable
- ▶ Can be custom configured

FEATURES

Mill Set-up: Operator is trained step-by-step on the principles of proper mill set-up. The set-up environment is generic and the emphasis is on the process and not what the screens look like.

Rolling Scenarios: Dynamic rolling is simulated. Operator downloads the set-up, starts the mill and initiates charging billets from the reheat furnace. The simulator displays motor speeds and currents as the billet threads through the mill. The operator applies cascade speed trims to any of the stands and observes the changes to motor loads due to push-pull interstand forces. He will have to react to events encountered in the normal operation of the mill.

On-line Help: Help/teach feature, assists the operator with basic theory of rolling and how it is applied in practice. Key topics covered are: Mill set-up, starting the mill, understanding Interstand Push-Pull (tension/compression), understanding impact drop compensation, pass reduction and relationship to speed, understanding drives.

Operator Interface: The HMI screens provide a generic environment for basic understanding of rolling, suitable for training operators - independent of their plant control system. Simulator and HMI screens, however, can be adapted to represent the user mill configuration.

Rolling theory: A comprehensive course includes basic rolling theory and hands-on rolling of shapes on Quad's lab rolling mill, to complement the mill control simulator sessions.

EQUIPMENT

Simulating PC: Running real time model of mechanical and electrical equipment and metallurgical models of bar sections

Mill Control System: A PLC controller board residing in the PC chassis running a real mill control system.

HMI: Operator interface screens (2), part of the mill control system, displaying set-up, control and monitoring functions. A separate screen is dedicated to on-line help and rolling theory training.

Control console: A flat membrane keyboard, design to provide a feel of real operator console, complete with raise and lower push buttons for each stand and additional critical control action push buttons.