

MANGALORE CHEMICALS & FERTILIZERS LIMITED (MCF)



MCF Simulator

SAFETY IMPROVEMENT AND OPERATIONAL ENHANCEMENT

Operator Training simulator (OTS) at MCF provides the most effective ways to train new operators, refresh the skills of experienced ones, and qualify or re-qualify all operators to retain knowledge, help ensure efficient operations, and avert potential disasters. MCF advanced training simulators for Ammonia and Urea plants allow realistic, hands-on training for normal operations, start-ups, shut-downs, familiarizing people with workflows, and for abnormal or emergency response to situations without compromising the health or safety of operators, the plant, or the surrounding community.

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BACKGROUND

Mangalore Chemicals and Fertilizers Limited (MCF) is a subsidiary of Zuari Agro Chemicals Limited, an Adventz group is the largest manufacturer of chemical fertilizers in the state of Karnataka. MCF has capacity to manufacture 2,17,800 MT Ammonia and 3,79,500 MT Urea.

Sim Infosystems had initially developed and implemented custom simulators for Ammonia plant and Urea plant during 2009 and 2016 respectively. During 2024, the simulators were upgraded to replicate the current plants which recently went through major upgradation and expansion.

ProSimulator™ INSTRUCTOR STATION

ProSimulator Instructor station enables the instructor to control and direct the training sessions. From the Instructor station, multiple independent training sessions can be invoked by the Instructor and each training sessions can be assigned to work with one or more operator stations. Using this software the Instructor can load a model, invoke malfunctions and monitor / evaluate the performance of the trainee.

ProSimulator™ OPERATOR STATION

The simulator is provided with emulation for Yokogawa Centum VP DCS. All functions and features that are essential for training are included in the emulation. The controls and interlock logic are also simulated and provides exact replica of the real plant systems. The field operations are simulated through separate field operation graphics on the operator station.

BENEFITS OF MCF SIMULATOR

Ability to transfer knowledge faster and retain information longer

Increased worker confidence and process knowledge for better decision-making

Ability to simulate and practice complex procedures and operations in a risk-free environment.

Ability to improve safety and emergency training.

Ability to demonstrate training compliance to regulatory authorities.

Ensure secure record-keeping of personnel training completion and competency.

Faster time for commissioning & Start-up

Improve productivity and efficiencies

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The following is the scope of simulated plants:

New Ammonia Plant

The Ammonia Plant was originally designed using ICI, UK technology utilizing steam naphtha reforming and Haldor Topsoe ammonia converter processes. Recently the plant was revamped using KBR technology.

- Desulphurisation
- Reforming
- Shift Converter & CO₂ Removal Section
- Synthesis Gas Compressor & Ammonia Synthesis
- Refrigeration Compressor
- Ammonia Recovery
- Process Condensate Section
- BFW, WHB and associated Steam System

New Urea Plant

- Ammonia Pumping, CO₂ Compression
- HP Section, MP and LP, Urea Hydrolyzer
- LP Carbamate, Recirculation
- Evaporation
- Associated Steam System

On behalf of the MCF team, I would like to congratulate and express my sincere gratitude to each and every member of SIM Infosystems for the outstanding work and dedication displayed throughout the successful completion of **Ammonia and Urea OTS upgradation project** ahead of the promised delivery date. Thank you for understanding our needs and expectations and being willing to address our concerns and ensuring the simulator met the highest standard when compared to actual DCS. The simulator has come out exceptionally well with all the additional features in it.

Rajeev R, Chief Manager-Production, MCFL 06-June-2024