

## EUR24\_24 - Increased availability with enhanced under voltage ride through of VFD systems

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Abstract:

Process availability depends on the ability of compressors to withstand line disturbances when driven through e-motors connect to grid.

This paper focuses primarily on compressors driven by VFD systems that are powered from the public grid.

Line disturbances can result in under voltages at the drive input in different forms (1, 2 & 3-phase), amplitudes and durations.

The ability of the process to withstand any line disturbances depend on both the compressor and drive system characteristics.

The output torque provided by the drive system is affected by characteristics of input voltage disturbances and ride through capability of the drive.

The operating point (speed, load torque) of the compressor and the available residual torque from drive system determines the time to surge of the compressor.

This paper explains enhancement of drive system ride-through characteristics through optimized drive control system.

Following topics are covered as part of this paper,

- *Line/grid disturbances – possible line disturbances including real time waveforms.*
- *Conventional vs novel enhanced under voltage ride through characteristics of a LCI (Load Commutated Inverter) drive.*
- *Compressor characteristics and calculating time to surge – the criteria for tripping the compressor system.*
- *Value of developed enhanced ride-through control through system simulations incorporating real measured line disturbances.*
- *Implementation in a real plant and results through measurements.*