

867 – Improved ride through of VFD connected to overhead lines

Authors: Jeremy Andrews (Siemens), Terje Knutsen (Equinor)

Abstract: Electrical driven compressors are subject to loss of torque at grid voltage disturbances. To avoid that the compressor runs into surge, the drive system shuts down. By using an improved ride through technology, shutdown and production losses are avoided.

Larger electrical driven compressors are normally controlled by frequency converters (Variable Speed Drive System - VSDS). Due to the maturity of larger voltage source converters in the past LCI converters have been used and the state of the art converter protection has been to block inverter pulses (zero torque) when the grid voltage goes below typically 85%. If the drive train shuts down, the plant's Production Efficiency, PE, will be reduced.

In this paper we will focus on the development of a ride through algorithm for LCI converters technology. Key topics are: Grid regularity study; Electrical system design and voltage disturbance study; Dynamic process study; Evaluation of coupling torque loading from voltage dip events; and finally Testing and technical qualification. The paper discusses one robustness project and one electrification project in Equinor.