

## 783 – Supporting decarbonisation - an introduction to electro-mechanical ASD

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Abstract: Electrification of Oil and Gas plants is an evolving trend as operators look to decarbonise facilities. This paper focuses on hybrid electro-mechanical ASD which can be an effective solution to turbine driver replacement or new plant versus large power electronic ASD, for speed regulation of driven equipment up to 20MW.

Hybrid electro-mechanical ASD utilize the power split principle which can result in efficiency gains of up to 2.5% versus a full-scale power electronic ASD. The drive consists of a fixed speed motor, two smaller servo-motors connected to a LV regenerative ASD providing control power and the main planetary gearbox which connects to the driven equipment.

The paper evaluates the underlying theory behind the technology, benefits in comparison to full-scale ASD, starting performance, reliability and availability and how digitalization can support maintenance. Assessment of TOTEX including lifecycle energy consumption and carbon dioxide emissions savings of the hybrid electro-mechanical ASD in comparison to the alternative traditional full-scale ASD are included. Finally, a case study is presented detailing a 5MW pump drive train upgrade.