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# Solving Motor Starting Power Quality Issues

## The Challenge

Due to the very high VAR inrush characteristic during start-up (5-7x the motor rating), larger motors can cause substantial utility power quality issues and disruptive voltage sags, even with reduced voltage starting methods.

The costs associated with these issues can be debilitating and include

- **unintended/unscheduled load tripping**
- **process curtailments**
- **and even required disconnection of a motor from the utility grid.**

## Applications with Line Start Motors

**INDUSTRIAL OPERATIONS:**

- Pumping
- Grinding
- Shredding
- Crushing
- Pelletizing
- Compressors
- Large conveyors

**INDUSTRIES SERVED:**

- Quarries
- Irrigation
- Water treatment & desalination
- Sawmills and woodchippers
- Chemical processing
- Metal processing
- Landfills and biogas
- Oil and gas

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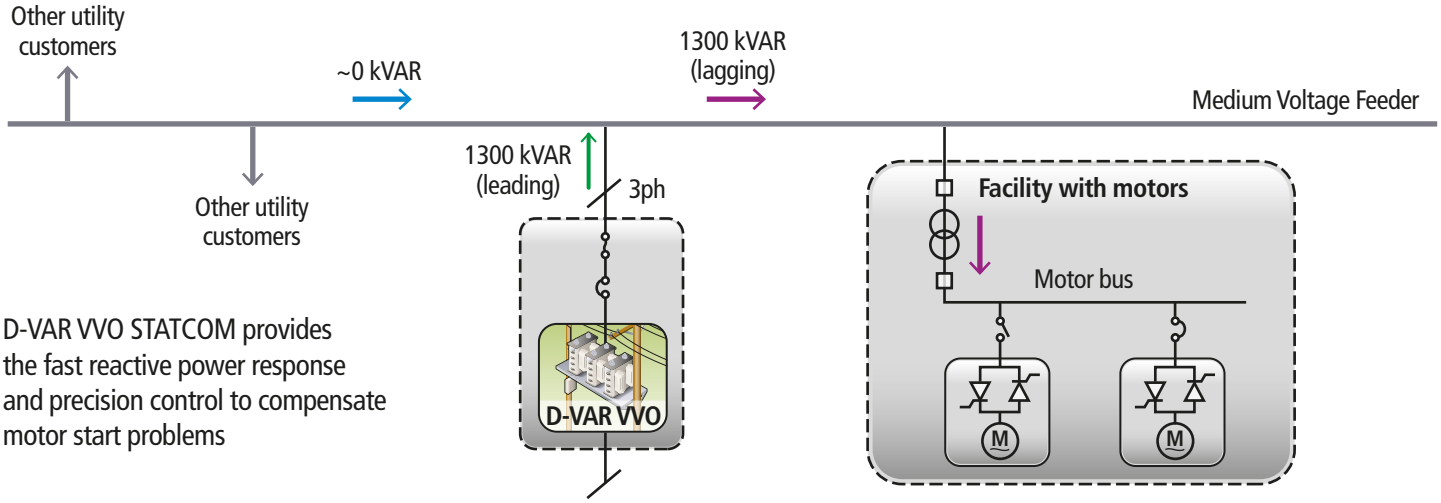
## Motor Starting Principle of Operation with STATCOM




D-VAR VVO STATCOM provides the fast reactive power response and precision control to compensate motor start problems

## D-VAR VVO® STATCOM Solution

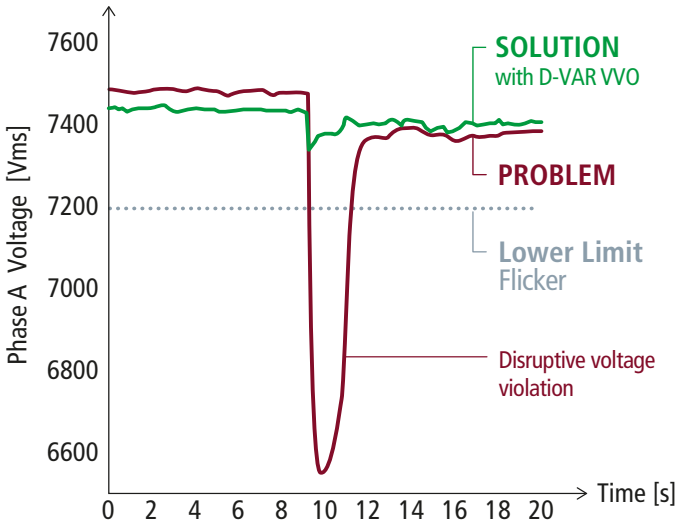
### Compensation for Motors Up to 1500 HP

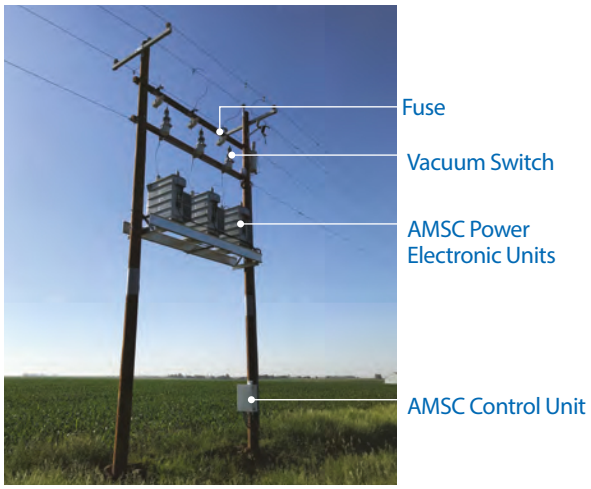
- Subcycle response and continuous control
- Overhead and pad-mounted options
- Configurations from 1.4 MVAR - 4 MVAR
- High speed waveform capture for validation
- Fully sealed, ingress proof enclosure
- Extremely low parasitic losses (<1% of output)
- No moving parts, no pumps, fans, or air filter

## D-VAR VVO® Cost Advantages:

- **Site-level protection:** VVO's on MV feeder can compensate multiple motors and multiple events
- **No scarce plant space:** Solve problems without altering the plant
- **No real estate procurement:** Distribution class equipment that fits in existing utility right-of-way
- **No routine or scheduled maintenance:** Design has no moving parts
- **No external Harmonic Filters:** Sine wave operation – high fidelity waveforms ensure IEEE 519 compliance

## A feeder with a line start motor load





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