Objective:
To develop a multilevel inverter and voltage balancing control scheme for medium voltage drives based on a new 5-level topology with reduced part count. A scaled-down 10 kW prototype has been built to verify the control scheme.

Features
- Topology with reduced number of clamping diodes;
- Theoretically proven voltage balancing theory for dc capacitor voltages with very small ripples;
- Unity power factor/reactive power control to stabilize voltage (integrated FACTS function into the drives);
- Low harmonic contents in both input and output currents even with fundamental frequency switching.
- Lower dv/dt and higher efficiency.

Control Diagram

Experimental Result

Application Examples:
Medium voltage drive. The system has been put into a product up to 8,000 Vac medium voltage drives.