Vacon
100% focus on AC drive and inverter products from small powers to multi-megawatt solutions

NIST/DOE Workshop
16-17 April, 2014
100% focus on AC drives

Vacon is the world’s largest company, in terms of revenues and product selection, that concentrates entirely on AC drives.
Product portfolio

**Compact AC drives**

- **VACON® 10** For applications where simplicity and efficiency are the key requirements
- **VACON® 20** One of the most adaptable and functional compact AC drives around
- **VACON® 20 Cold Plate** For customer-specific cooling solutions
- **VACON® 20 X** Outstanding reliability and performance in decentralized installations
- **VACON® 5X** Small and robust AC drives designed for harsh environments

**Multipurpose AC drives**

- **VACON® 100** High-performance multipurpose AC drive with unique possibilities for industries
- **VACON® 100 FLOW** AC drive dedicated to pump, fan and compressor applications
- **VACON® 100 HVAC** AC drive dedicated to heating, ventilation and air conditioning
- **VACON® 100 X** Powerful decentralized AC drive with a robust IP66/Type 4X enclosure
- **VACON® 50/ 500X** Robust IP66/Type 4X drive for more demanding environments
- **VACON® NXL** Suited for industrial and residential processes
- **VACON® NXS** Powerful, robust AC drive for heavy use

**Industrial AC drives**

- **VACON® NXP** A premium AC drive where robustness, reliability, precision and power are required
- **VACON® NXP Common DC Bus** Efficient and flexible solutions for demanding industrial drive systems
- **VACON® NXP Liquid Cooled** Premium AC drive with space-saving cooling system
- **VACON® NXC** Cabinet mounted AC drives with safety, flexibility, robustness and compactness

**Solar power inverters**

- **VACON® 8000 SOLAR Multimaster Inverter** A robust inverter that utilizes Multimaster technology to cover all the needs and grid code approvals of the commercial, industrial and utility sectors
- **VACON® 8000 SOLAR Standalone Inverter** A cabinet-assembled with integrated isolation transformers for maximum grid compatibility worldwide. Ideally suited for smaller, decentralized installations e.g. rooftops
- **VACON® 8000 SOLAR MW Station** A standalone building designed to house and protect VACON 8000 SOLAR inverters in challenging environments. All in one convenient turnkey package.
- **VACON® 8000 SOLAR Inverter Module** A comprehensive solar inverter solution with a wide range of options to ensure it fits requirements

**Wind power converters**

- **VACON® 8000 WIND** A double-fed power converter solution which has been specially designed to control and adjust power generated by wind turbines.
- **Converter Modules Air Cooled** Air cooled modules for wind power converters which utilize VACON® NXP technology. Versatile and efficient, these offer solutions which are sure to bring a quick return on your investment.
- **Converter Modules Liquid Cooled** High quality modules for wind power converters which utilize VACON® NXP liquid-cooled drives to provide a comprehensive space-saving solution for challenging environments.
- **Drives for yaw, pitch and auxiliary control** VACON® NXP AC drives can be adapted for a whole range of wind power applications where performance, robustness and power are a necessity.

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690V @ 5MW
WBG CUSTOMER BENEFITS

Cost / Efficiency

- Reduced THD (line/load)
- Reduced magnetics (line/load)
- Reduced thermal management costs
- REDUCED OVERALL SYSTEM COSTs --- expected

Reliability

- Reduced number of devices
- Cosmic-ray derating < Si

Performance

- Significant performance improvement based on higher $F_{sw}$ to address motor performance and grid stability issues

Easy

- Reduced power footprint to facilitate retrofits of “soft starters”
- Higher powers air cooled with higher temperature devices
WBG CONCERNS / RESEARCH AREAS

**Customers looking for 20yr Life, 8yr MTBF**
- Accurate models for reliability predictions during the design phase
- Real-time monitoring of the power device fatigue to address reliability/up-time

**Du/Dt**
- Differential and Common Mode EMI (>50kV/us)
- Insulation systems (cable, motor, transformers, inductors, Low inductance BUS)
- Measurement devices susceptibility to du/dt
- Gate driver power supply

**High Temperature packaging**
- Silicone encapsulant temperature stability
- Sinter die attach and Ribbon bonding
Summary

Material Science

RF management

Device packaging
Thank You!