Agenda

Vestas Overview

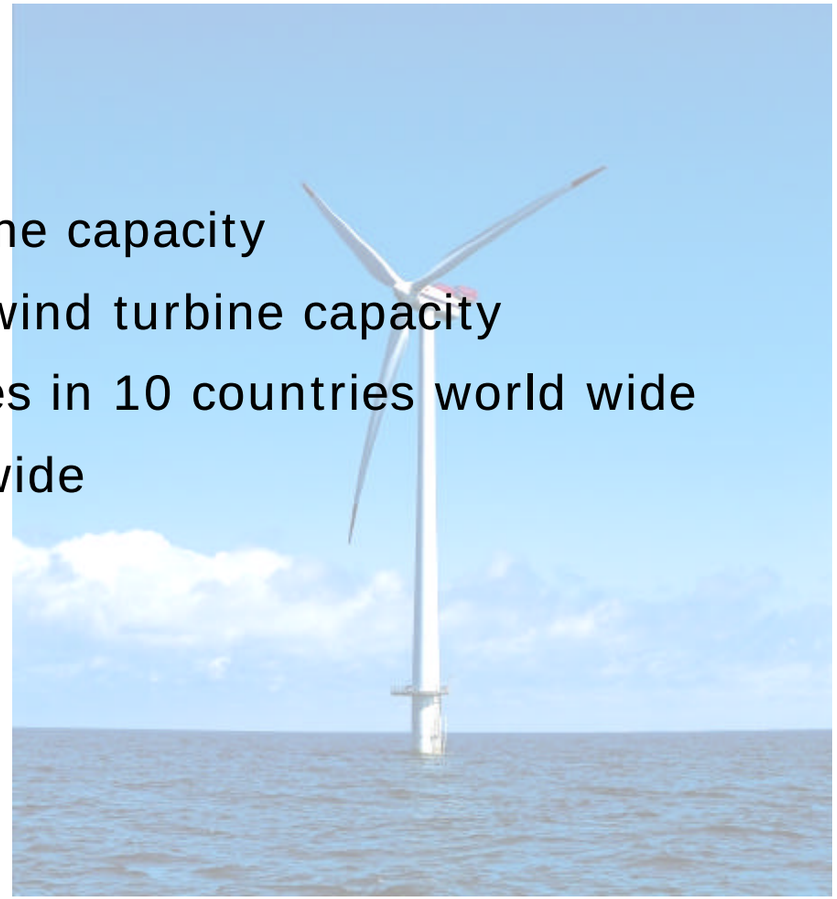
Turbine Technology

Interconnection

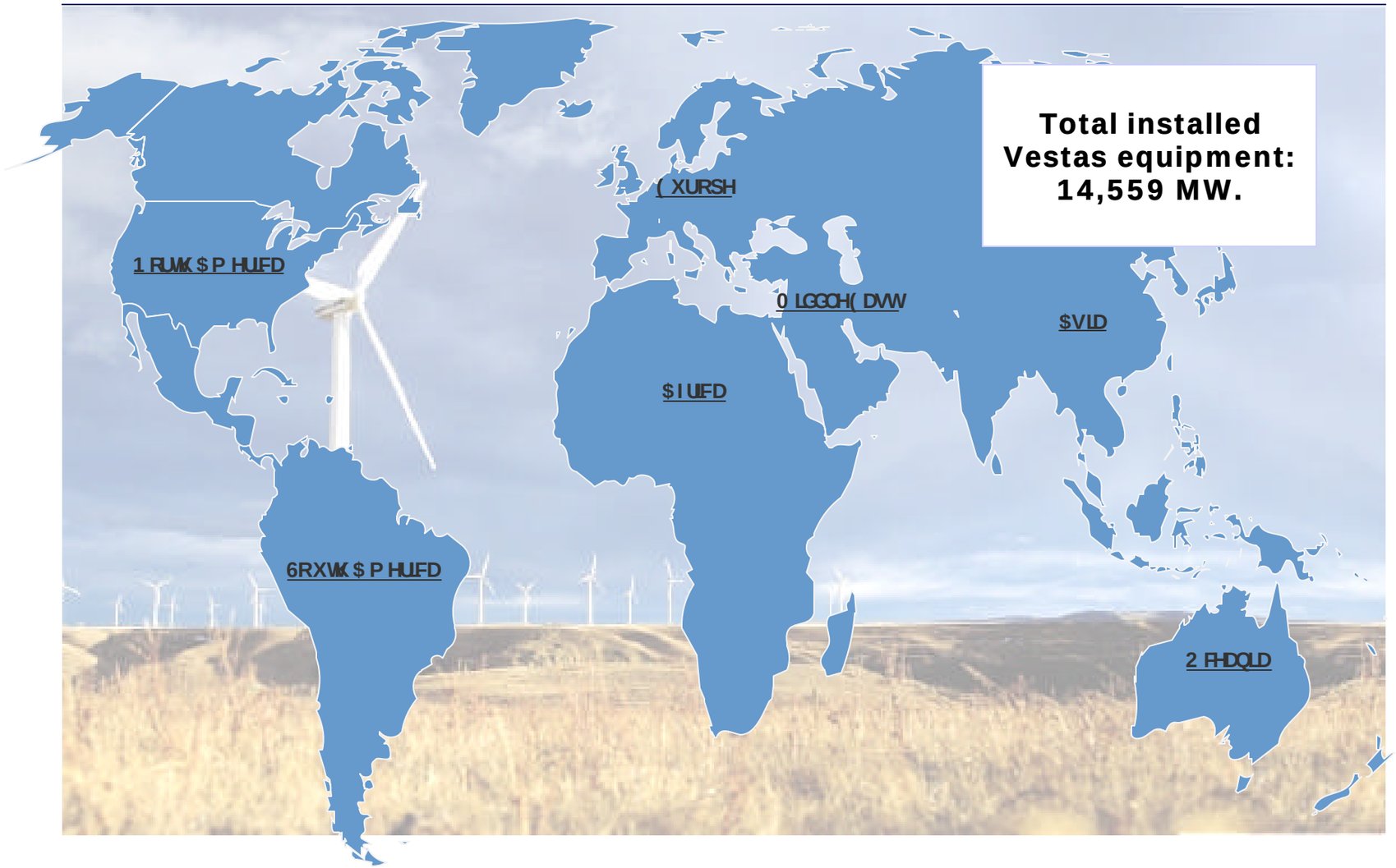
Company overview

Be an international leader and ensure sufficient financial strength to continue internationalization.

- 2003 installed 2,667 MW
- Active in 40 countries
- 35% of global wind turbine capacity
- 45% of North American wind turbine capacity
- 30 manufacturing facilities in 10 countries world wide
- 8,500 employees world wide
- 450 R&D engineers

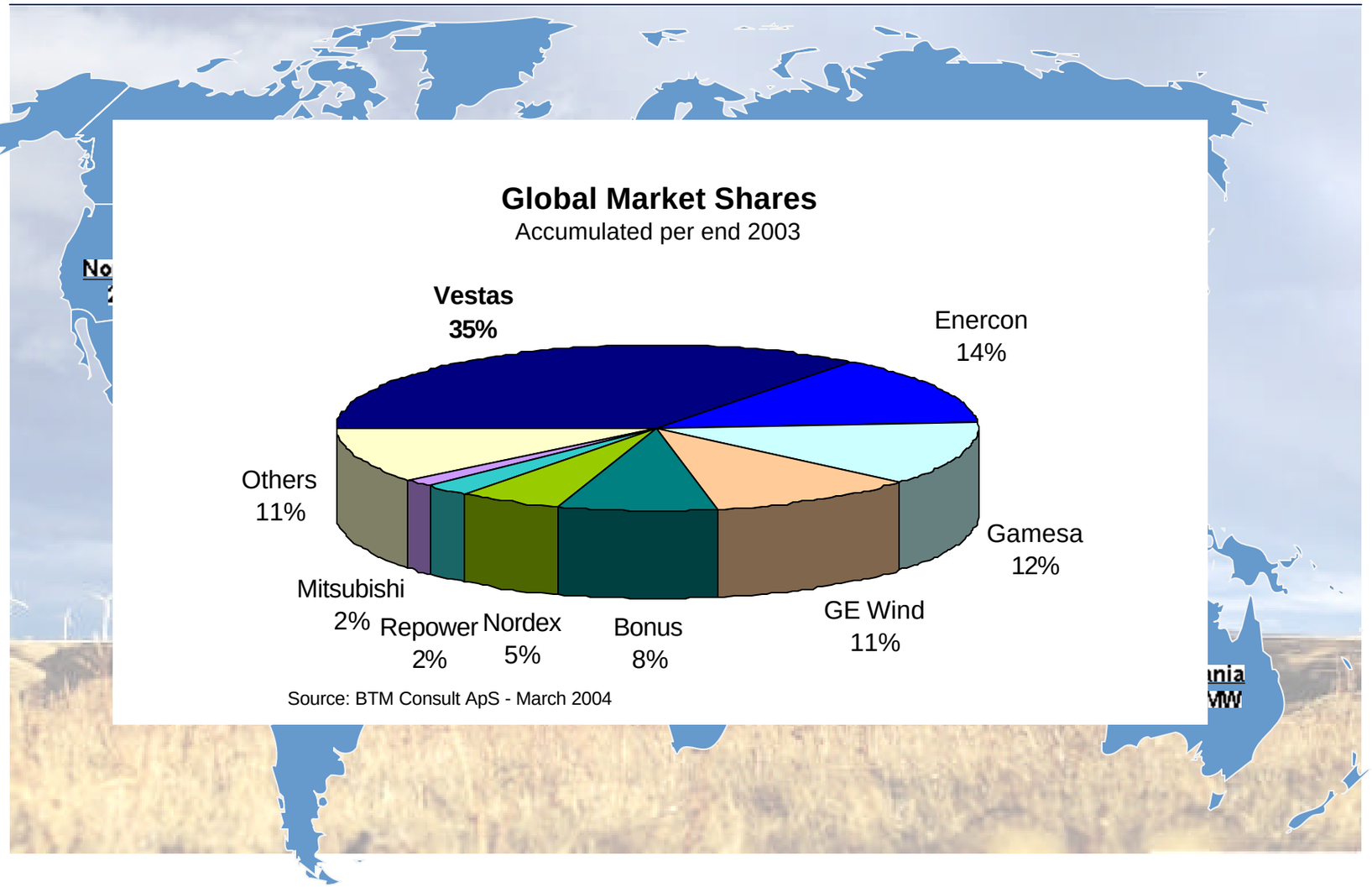


Our installations worldwide



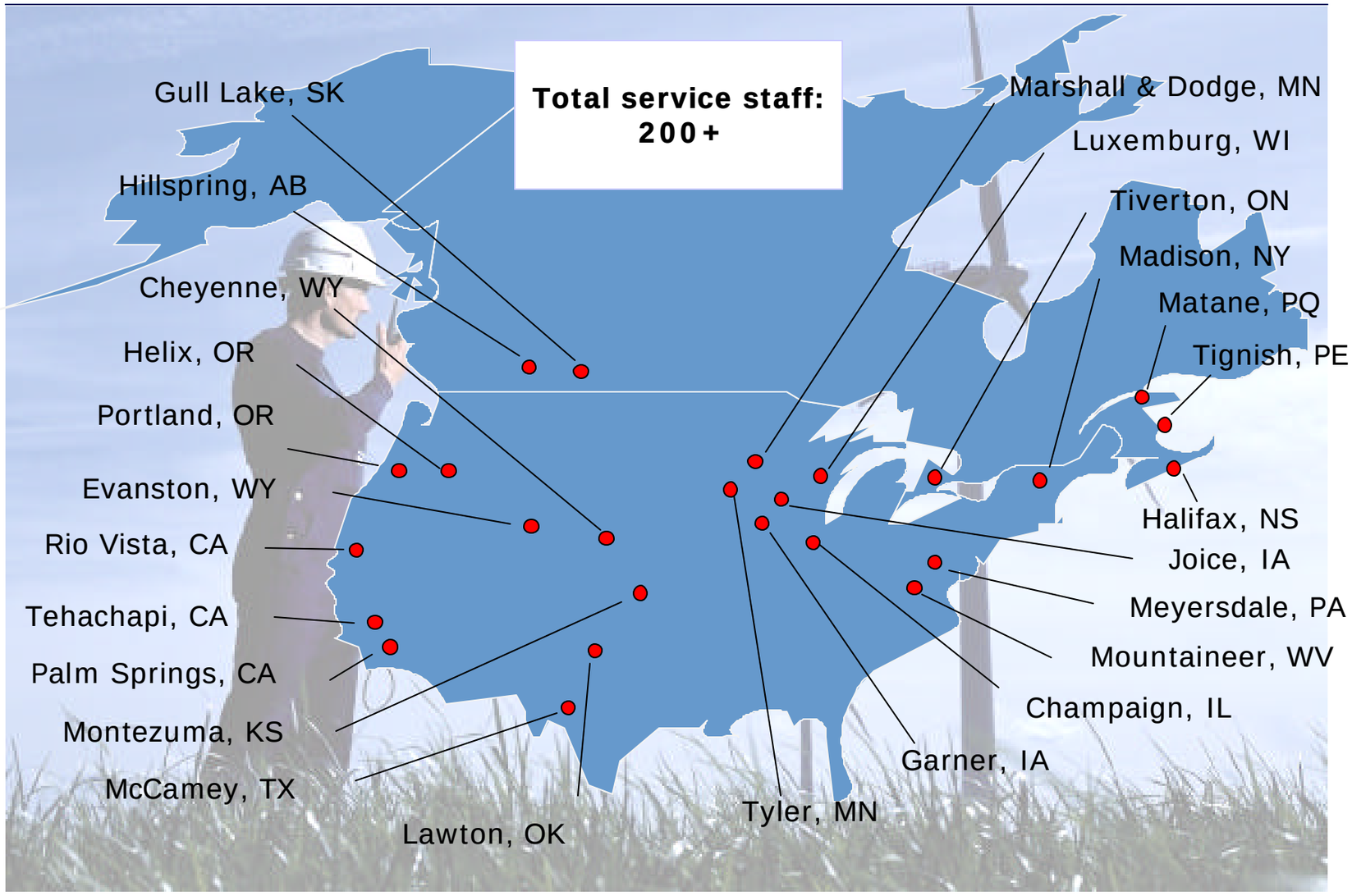
Total commissioned turbines per January 1, 2004.

Our installations worldwide



Gamesa installations are based on Vestas technology.

We are here for you

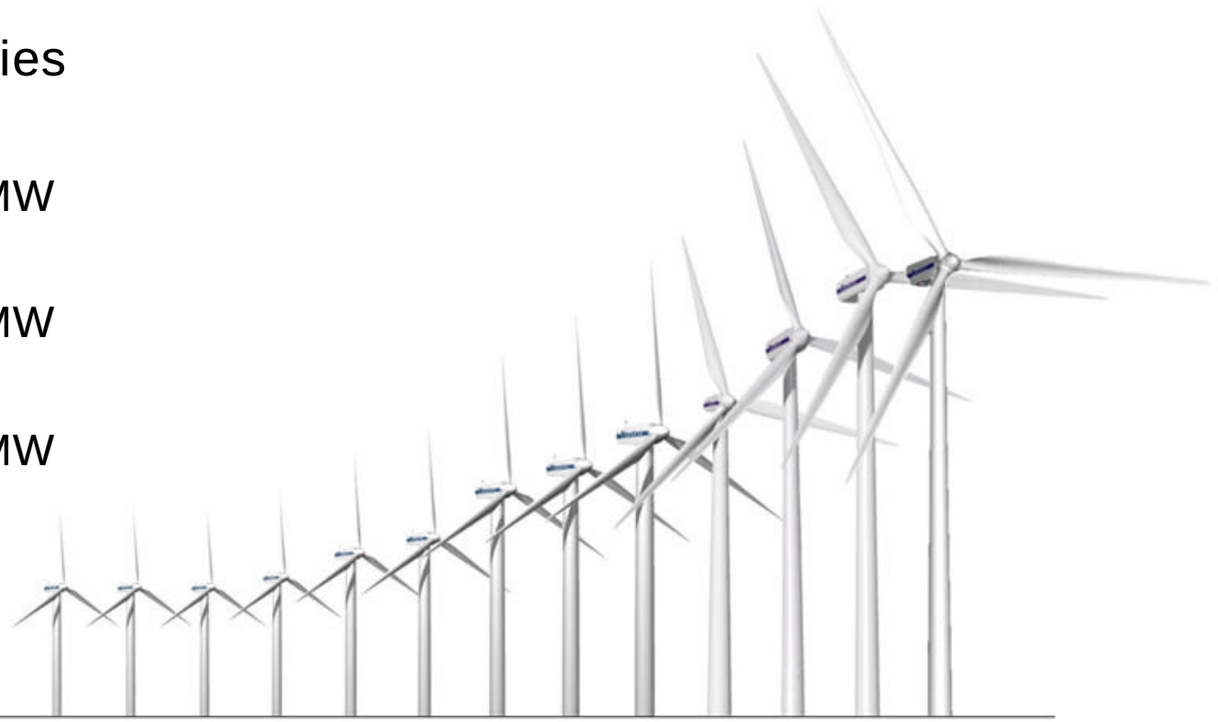


Vestas Americas employees per March 2004.

The development of our turbines

Latest technologies

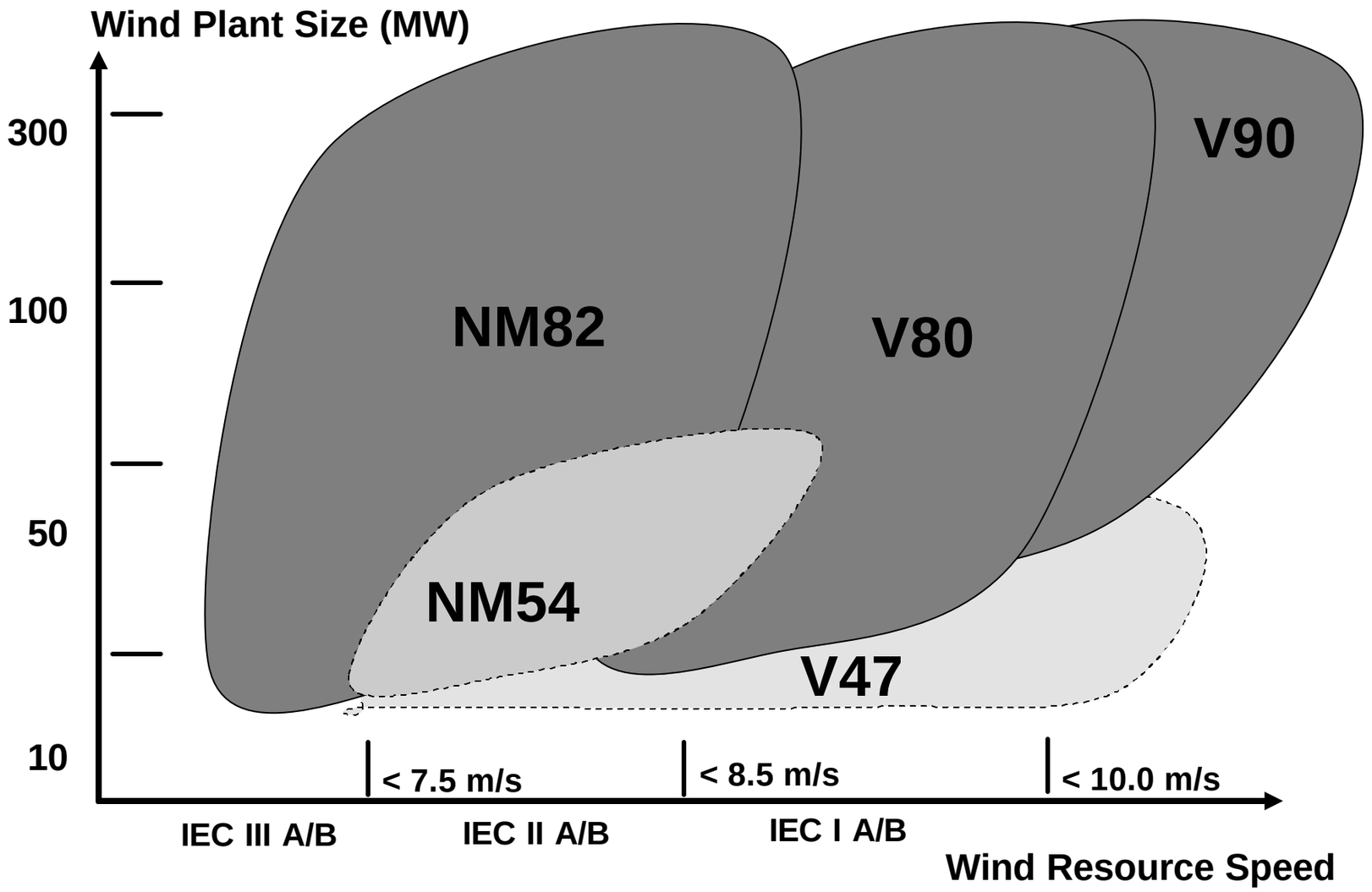
- NM110 4.2MW
- V90 3.0MW
- NM92 2.75MW
- V90 2.0MW
- NM82 1.65MW



Product/Rotor diameter (m)	V15	V17	V19	V20	V25	V27	V39	V44	V47	V52	V66	V80	V90
Year of installation	1981	1984	1986	1987	1988	1989	1991	1995	1997	2000	1999	2000	2002
Capacity (kW)	55	75	90	100	200	225	500	600	660	850	1750	2000	3000
MWh/year	217	265	301	346	481	647	1304	1581	1947	2530	4705	6768	–

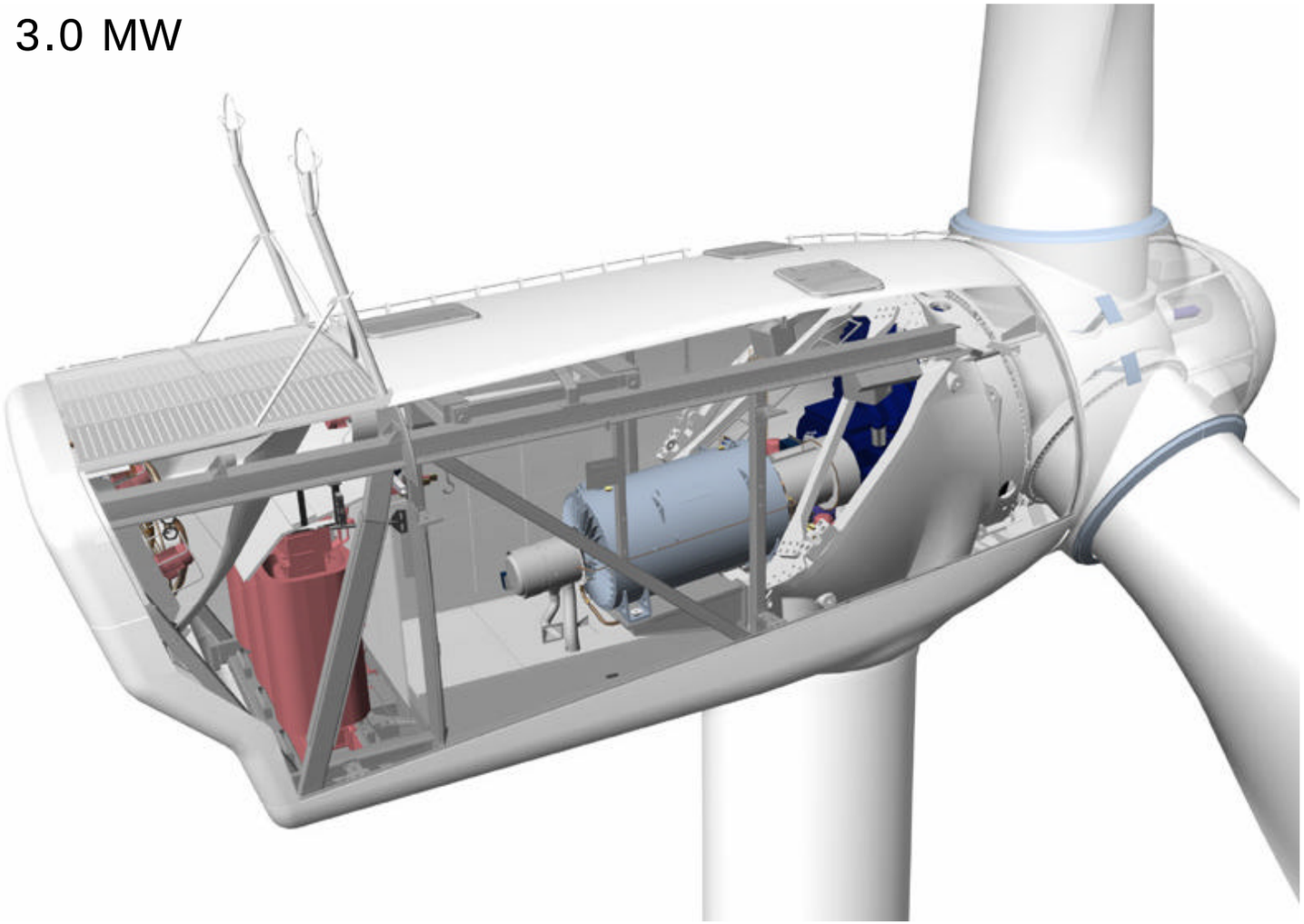
NEG Micon History	M55	M108	M225	M400	NM44	NM48	NM54	NM72C	NM72/82	NM92	NM110
Capacity (KW)	55	108	225	400	600	750	950	1500	1650	2750	4200

The development of our turbines



Combine new drive train design and materials with proven concepts

V90 3.0 MW



North Texas Nacelle Transport

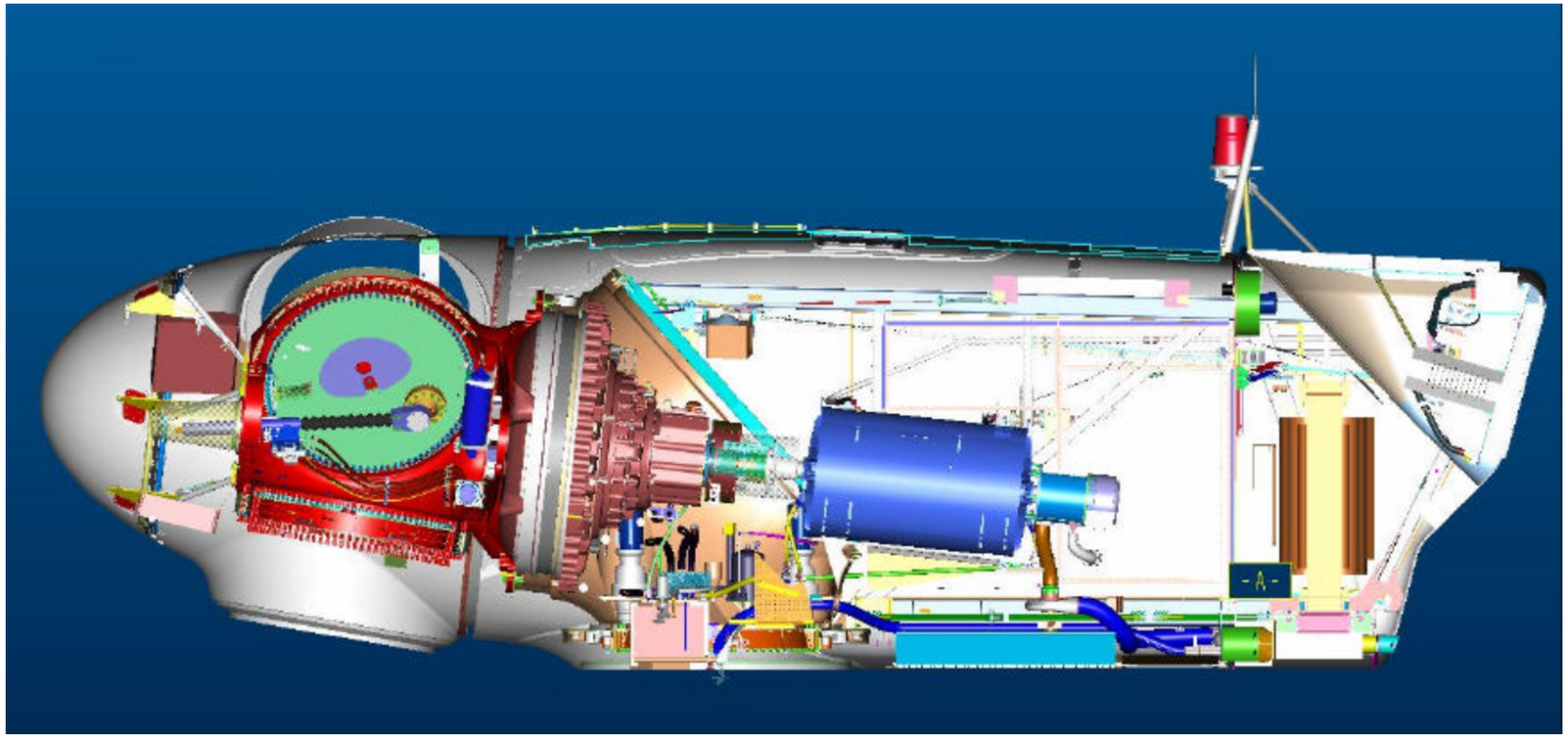
Nacelle Interior

Support structure:

•Cast iron main frame

•Rear, girder structure

Transformer Radiator compartment



Designed for transport

Main Frame, Gear box, Generator,

Main Frame:

Cast iron

Designed to optimise load distribution

Gear box:

2 planetary 1 helical stage

Bolted directly to main frame

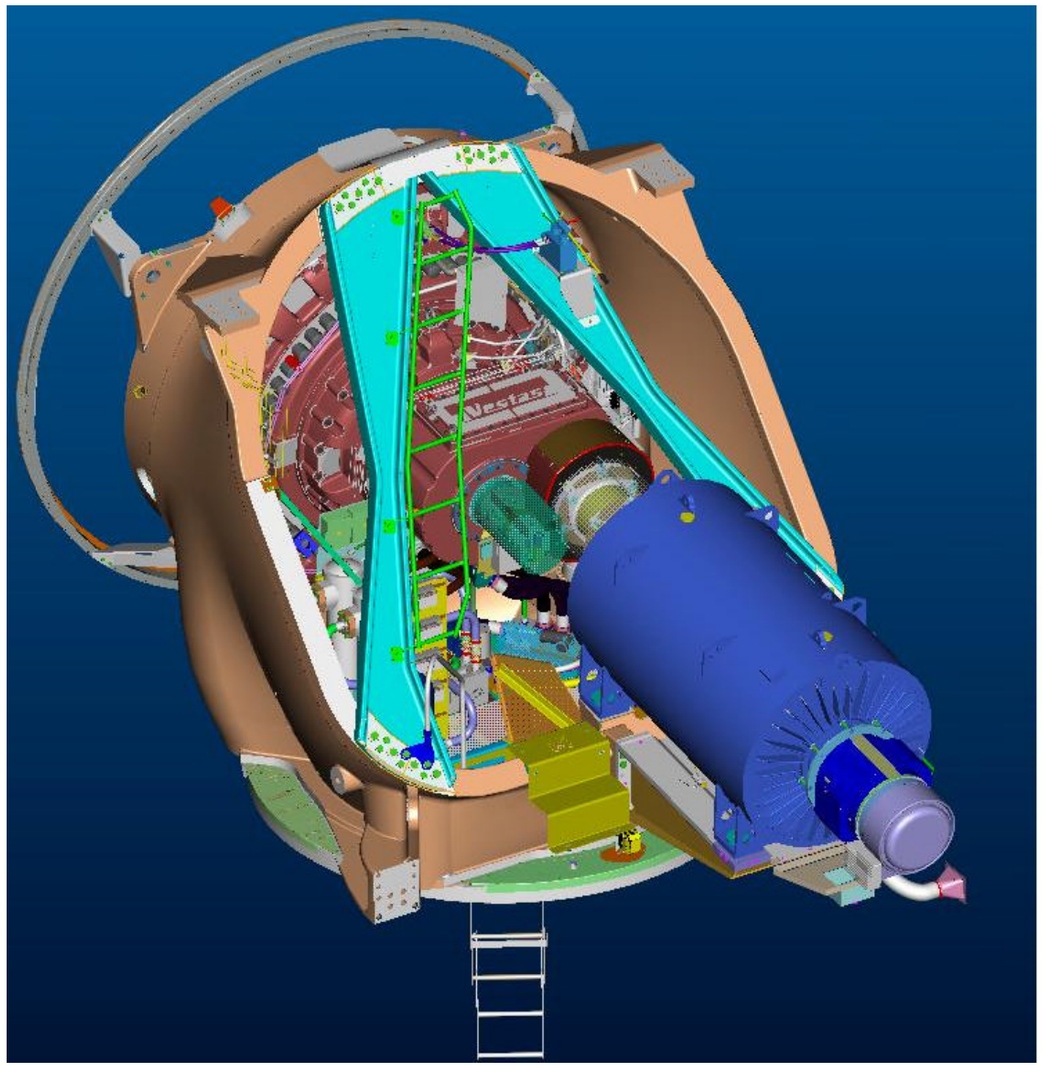
Generator:

1000 Volt

4 poled async.

Water cooled

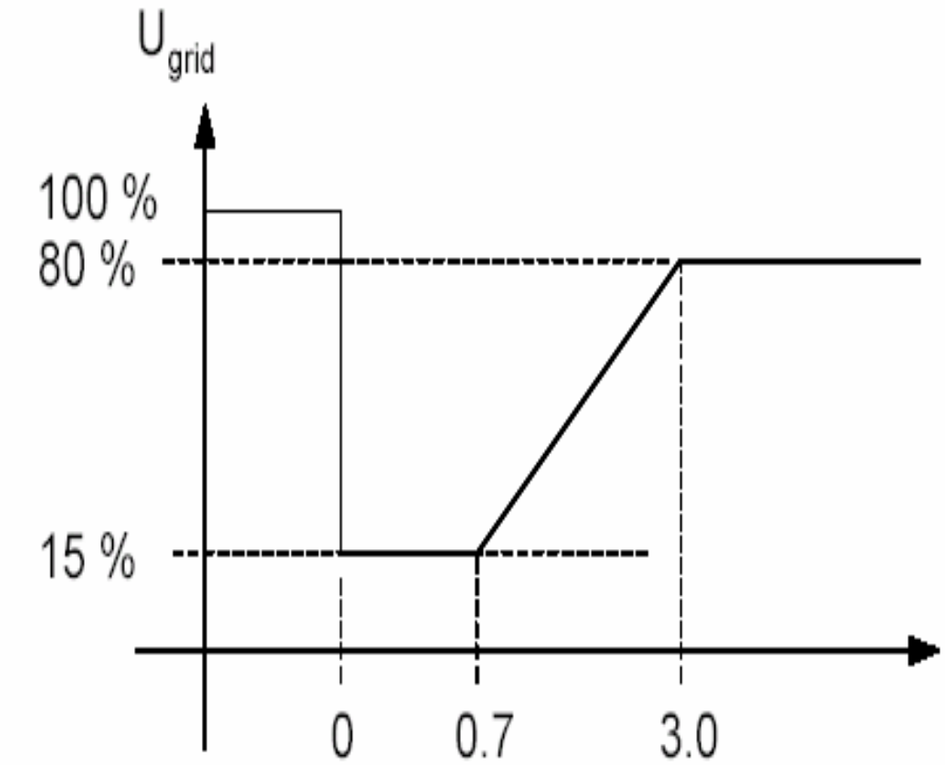
Oil lubricated



Voltage and Frequency Parameter limits based to meet WECC standards

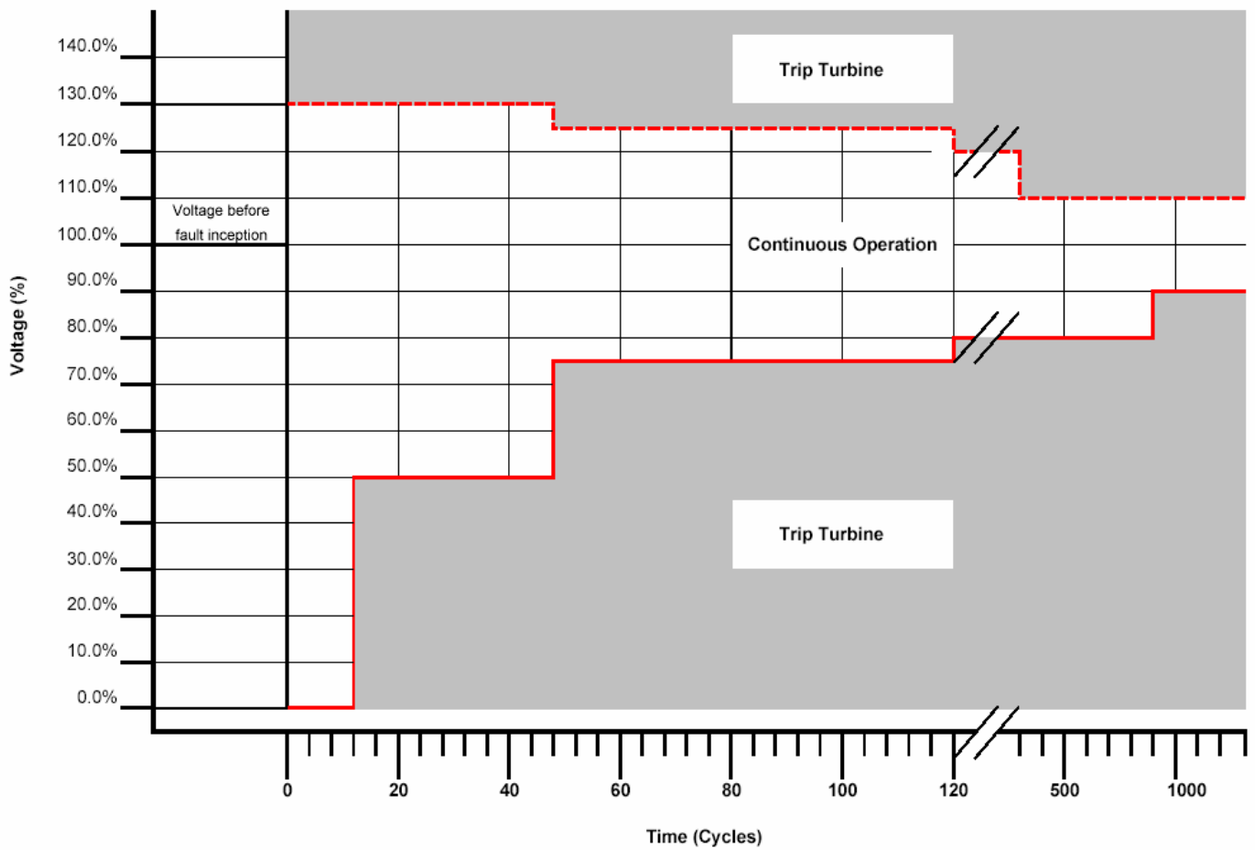
- Variable-Speed
- Reactive Power Control
- Voltage Support
- Ride-Through
- Utility Control
- Smooth Connection Sequence
- Reduced Power Fluctuation

V90-3.0MW VCRS
with AGO2

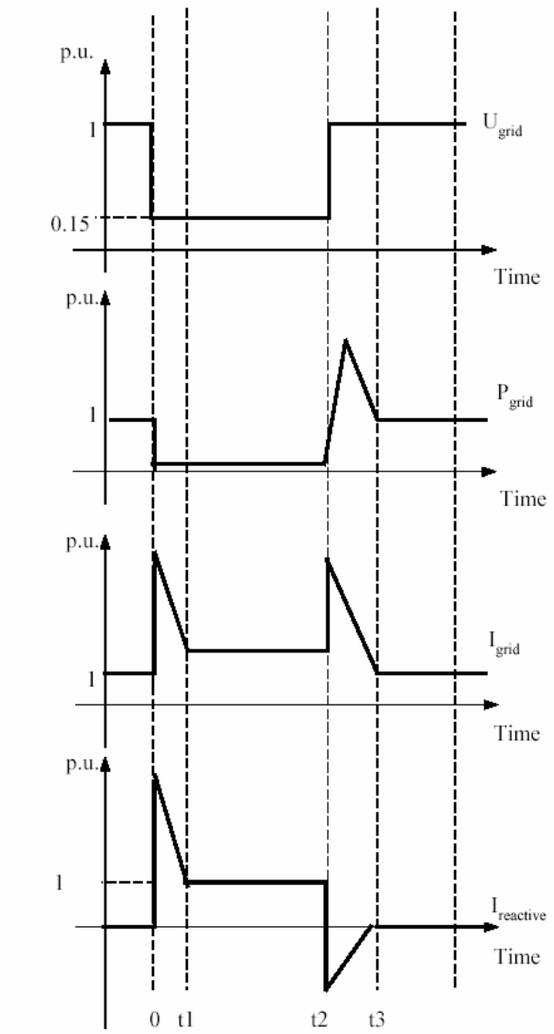


WTG Capabilities

V80 Voltage Ride-Through



Transient



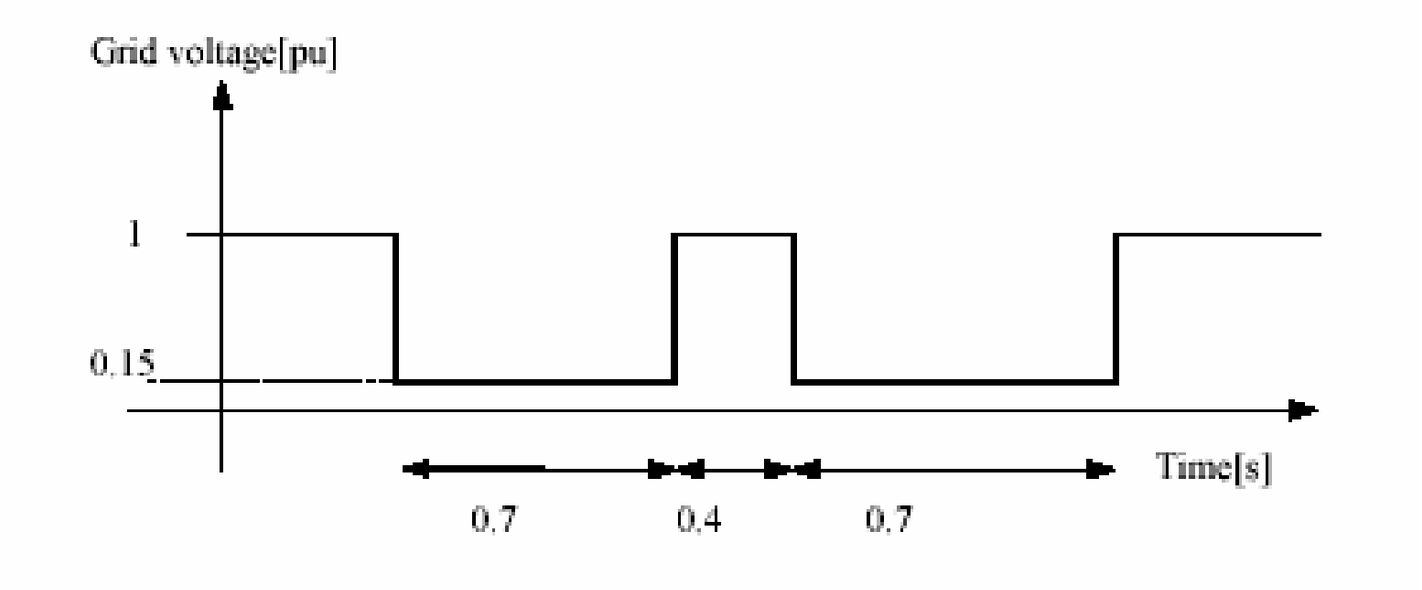
Active power decreases linearly with voltage, current is increased to 1 – 2 p.u. during dip

High dv/dt generator can absorb or deliver reactive power to grid

Re-magnetizing time is less than 100 ms

(t1 ≈ 0 - 50 ms, t3 – t2 ≈ 0 – 100 ms)

Reclosure Operation



Turbine Electrical Modeling

Open versions of PSS/E models available today

Working on PSLF validated versions for both product lines at this point

V90 North Texas