

The Future is

BIGGER

*Have you met my X?*

David Laino  
June 14, 2016

# The Presentation Plan

- Boring company info
- Reminiscing
- Current Events
- Go on and on about my X
- We'll all laugh



# The Company Specs



## WORKFORCE

**130 EMPLOYEES**

UK	CA	US	DK	IT
48	57	12	10	3

## UK MARKET SHARE

**50-225 kW**

**~85%**

## VERTICALLY INTEGRATED

**DESIGN  
TEST  
BUILD  
DISTRIBUTE  
SUPPORT  
INVEST**

## PRODUCTION HISTORY

UNITS SHIPPED

**>1,000**

CUMULATIVE OPERATING HOURS

**>21MM**

GLOBAL FLEET AVAILABILITY

**>98%**

Leading global manufacturer of small and medium wind turbines  
Since 2007

# Multinational Company

**CANADA**

Vancouver  
Headquarters  
Manufacturing: E-Series



**UK**

West Midlands  
Manufacturing: X-Series



**DENMARK**

Gadstrup  
R&D, Design &  
Engineering  
Hub



**US**

Spanish Fork, Utah  
Regional Testing Center



# A Brief History of S, E, X



**S-Series**  
5kW  
2006 - ~2010



**E-Series**  
50 - 85kW  
Since 2008

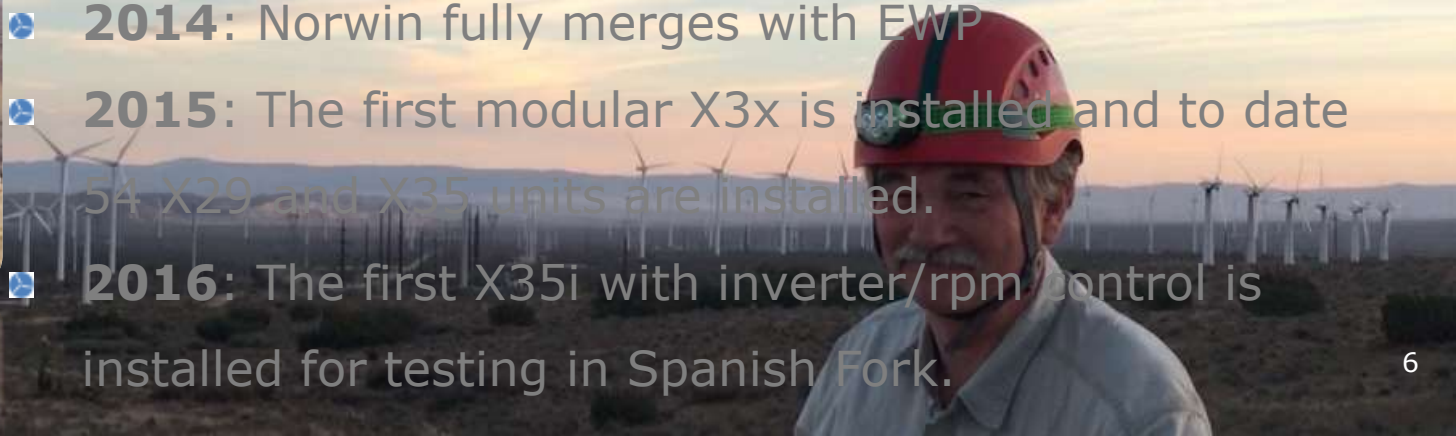
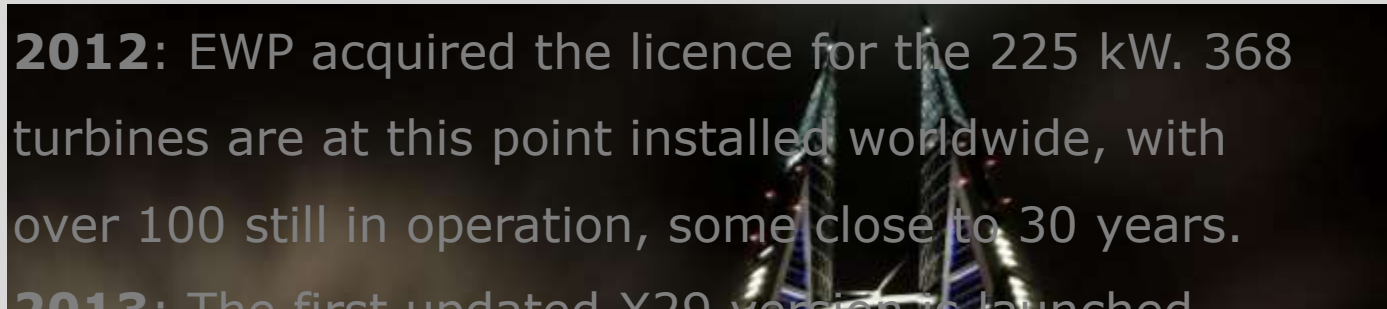


**X-Series**  
180 - 225kW  
Since 2012

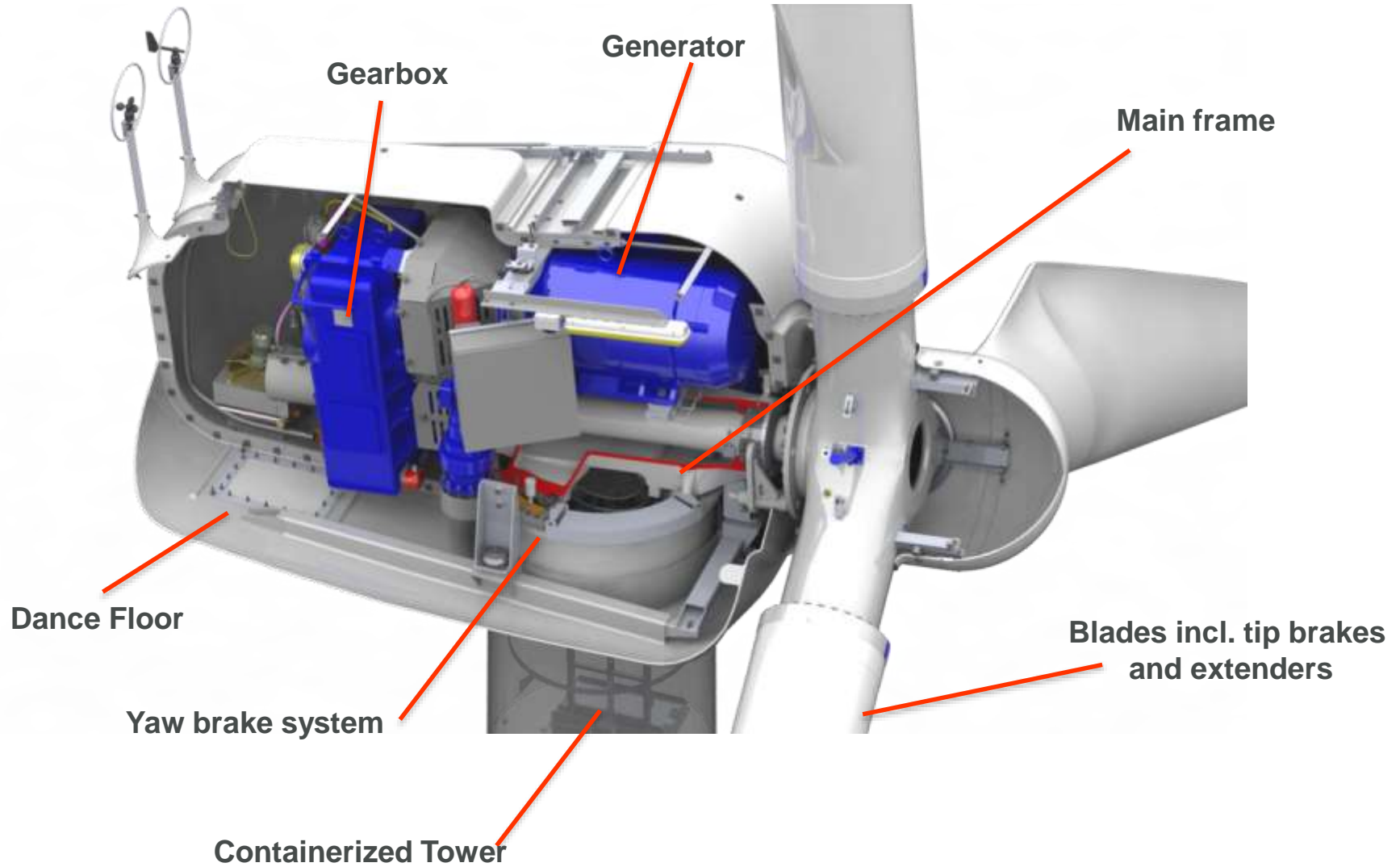
# A Trip Down Memory Lane with my X



- **1985:** The original X predecessor – the DANWIN 19 wind turbine – first installed
- **1992:** Norwin takes over the design and the GET27 version is certified by Germanischer Lloyd
- **2011:** The concept for modular X3x is formulated.
- **2012:** EWP acquired the licence for the 225 kW. 368 turbines are at this point installed worldwide, with over 100 still in operation, some close to 30 years.
- **2013:** The first updated X29 version is launched.
- **2014:** Norwin fully merges with EWP
- **2015:** The first modular X3x is installed and to date 54 X29 and X35 units are installed.
- **2016:** The first X35i with inverter/rpm control is installed for testing in Spanish Fork.



# My X is Beautiful (on the inside)



# My X's Best Features

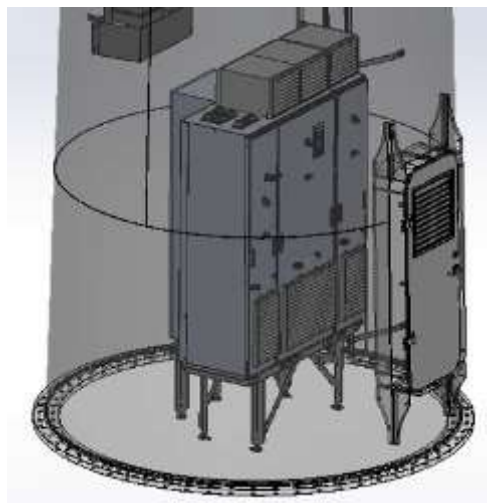
Aerodynamic  
pitching tip brakes



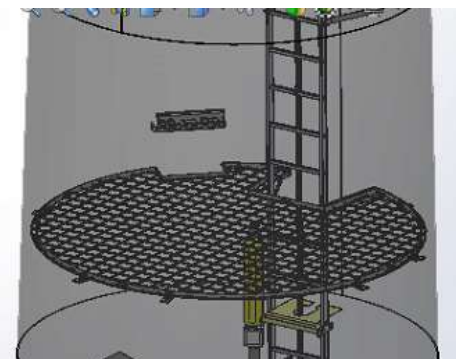
Penthouse views!  
(with room for friends)



All wiring and control  
cabinets in tower base



Internal climbing  
ladder with platforms





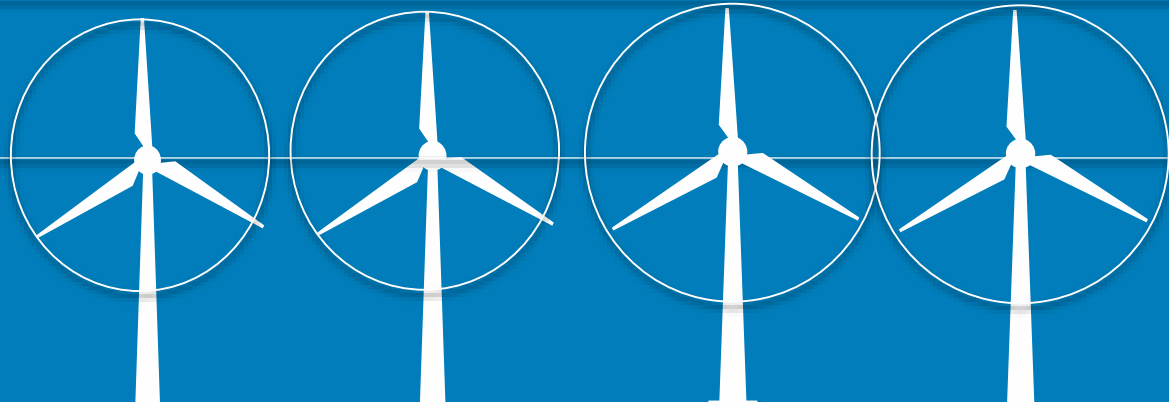
# The X Series Wind Turbines

Wind Class IA, IIA and IIIA

Largest Rotor In Class = Low Cost of Energy

47.5m tip height

30m hub height



Versions: X30/X30i X33/X33i X35Q/X35iQ X35/X35i

## X Series

Rated Power	225 kW	225 kW	180 kW	225 kW
AEP @ 7m/s	640,000 kWh	690,000 kWh	610,000 kWh	730,000 kWh
Hub Height Options	30/40/50m	30/40/50m	30/40/50m	30/40/50m

# Xi Series | for Off/Smart-Grid System Integration

## Xi Series Design Features

- Inverter add-on for off-grid and future-grid system integration
- Power output control via external integration system
- Reactive power input/output control
- Low Voltage Ride Through (LVRT)
- Potential dump load integration

## X35i 225 kW

- Built on proven X35 design
- Ready June 2016
- Fully containerized shipment available if supplied with 30m tower



## My X is Certifiable!

- DOE/NREL funding obtained for full type certification of X35i
- Effort underway with Intertek
  - Started May 2016
  - Targeted completion November 2017
- Spanish Fork to obtain Intertek RTL status:
  - Power Performance (IEC 61400-12-1)
  - Acoustic (IEC 61400-11)
  - Loads Measurements (IEC 61400-13)
- Full X3x family certification to follow

The logo for Endurance wind power features the word "Endurance" in a green, stylized font with a registered trademark symbol, and "wind power" in a blue, sans-serif font below it. The background of the entire slide is a photograph of a white wind turbine in a green, hilly landscape with a cloudy sky.

**Endurance**<sup>®</sup>  
wind power

Any Questions about my X?