

AWEA SUPPLY CHAIN CONFERENCE
ENTERING THE WIND ENERGY INDUSTRY

Little Rock, AR March 24th, 2011

By **Mark Hoek** LM Wind Power Americas Blades
Director, Americas Materials & Logistics

THE POWER TO DELIVER

lmwindpower.com

LM WIND POWER

LM Wind Power : General Overview

LM WIND POWER



1978 5 meter blades introduced
Still operating!



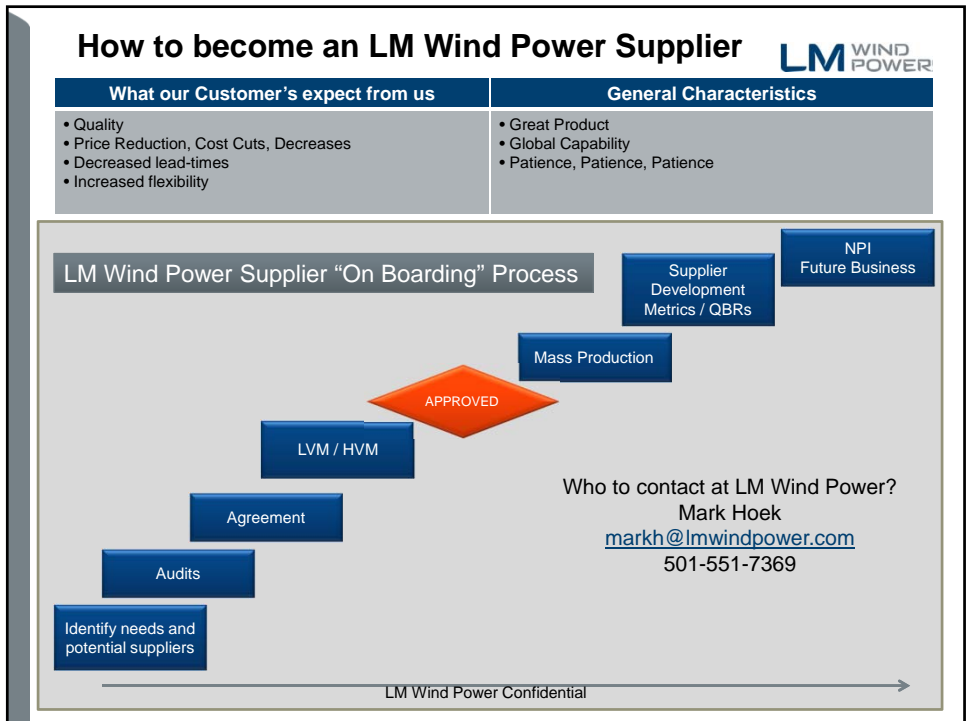
2004 61.5 meter blades introduced
World's largest blade



How big can we go

- ▶ LM is the world's largest independent blade manufacturer
- ▶ LM originated in 1940, began producing blades in 1978 and in USA in 1999
- ▶ Current Americas footprint: 2 countries, 4 facilities, 7 blade models
- ▶ 2 additional blade models planned for each 2012 and 2013 (to date)
- ▶ Americas region re-defined in 2010 adding South Americas & Latin America

LM Wind Power Confidential





Energy Transportation Inc.

- Shelli Short
 - Business Development and Logistics Manager
- Heavy haul trucking, crane & rigging, and rail distribution yard storage/inventory management



ENERGY
TRANSPORTATION
INC.

Strengths and Challenges

Strengths

- Asset Based
- Transload Services
 - Rail offload
 - Storage/Inv Mgmt
 - Trucking



Challenges

- Retaining Qualified Drivers
- State regulations and permitting
- Keeping cranes busy at DC



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AWEA Wind Power Supply Chain Workshop
March 24, 2011 • Little Rock, AR

AWEA

LANDSTAR

Jay Folladori
V. P. Heavy Specialized
Landstar Transportation Logistics Inc.

Providing Supply Chain Solutions and Complete Global & Domestic Transportation Services

LANDSTAR

SUPPLY CHAIN SOLUTIONS • AIR • OCEAN • WAREHOUSING • RAIL INTERMODAL • TRUCKLOAD • LTL • HEAVY HAUL /SPECIALIZED • EXPEDITED

Current Transportation Solutions

Landstar is one of the leading providers of **SAFE** Heavy Specialized transportation and logistics services in North America. With a fleet of over 3000 platform trailers and over 500 heavy specialized trailers Landstar provides customers the capacity to meet the timely demands of their supply chain



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Wind Energy Strengths

Landstar provides supply chain solutions and complete global and domestic transportation services. Through our unique and vast network of independent transportation and warehouse capacity providers and independent sales agents, we have the flexibility and experience to meet any supply chain challenge.



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Largest Challenge

Safety





NORDEX USA, INC.
 AWEA Supply Chain Workshop

LITTLE ROCK
 24 MARCH 2011



NORDEX OVERVIEW



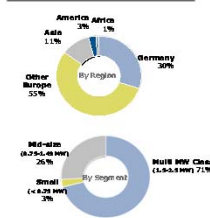
1. INTRODUCTION TO NORDEX
 1.1. INTRODUCTION TO NORDEX



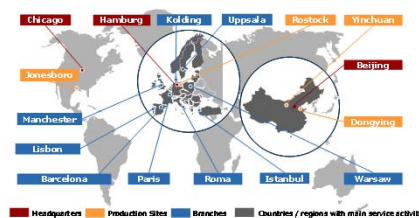
Nordex Group at a glance

- Founded in 1995, Headquarters in Germany
- Global manufacturer of wind energy systems with a focus on turbines in the 2-5 MW class
- Most extensive and consistent use of platform technology in the industry; variants for different wind and climate conditions with some shared components
- Main production sites in Germany, the United States (Jonesboro) and China
- Exceptional revenue growth track record and strong future growth potential
- 2008 Sales: € 2,140m / \$ 289m*
- 2009 Sales: € 4,156m / \$ 1,552m*
- 2010 Sales: € 1,183m / \$ 1,597m*
- 2010 Sales: € 1,009m / \$ 1,361m*
- 2,357 employees as of 15 March 2011
- Total installations as of 1 January 2011: > 6,500 MW / > 4,420 WTG

Installed base



1. INTRODUCTION TO NORDEX
 1.2. INTRODUCTION TO NORDEX



3. NORDEX WIND TURBINES
 3.1. NORDEX WIND TURBINES



Nordex 2-2.5 MW Class	2-2000	2-2100	2-2200	2-2300	2-2400
Wind Speed	High	High	High	High	Low
Regulation	Pitch	Pitch	Pitch	max/Un	Pitch
Construction (CIC Class)	3	3	3	3	3
Configuration	3P2	3P2	3P2	3P2	3P2
Max. Hub Height (m)	2,600	2,600	2,600	2,600	2,600
Rotor Diameter (m)	80	80	80	80	117
Rated Power (kW)	2,000	2,000	2,000	2,000	2,000
Tower Height (m)	65, 70, 80	70, 80	80, 80	80, 80, 80	80
Design life (years)	20	20	20	20	20
Max. Area (m²)	300.5	306.5	302	306	306

Presentation | Nordex USA, Inc. | Little Rock | 24 March 2011

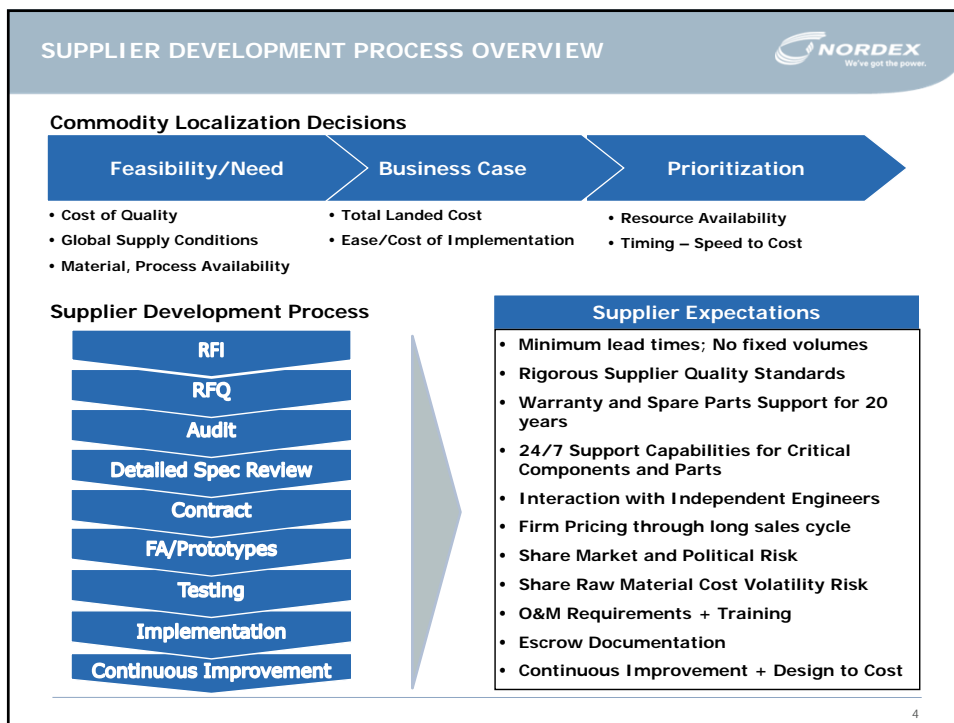
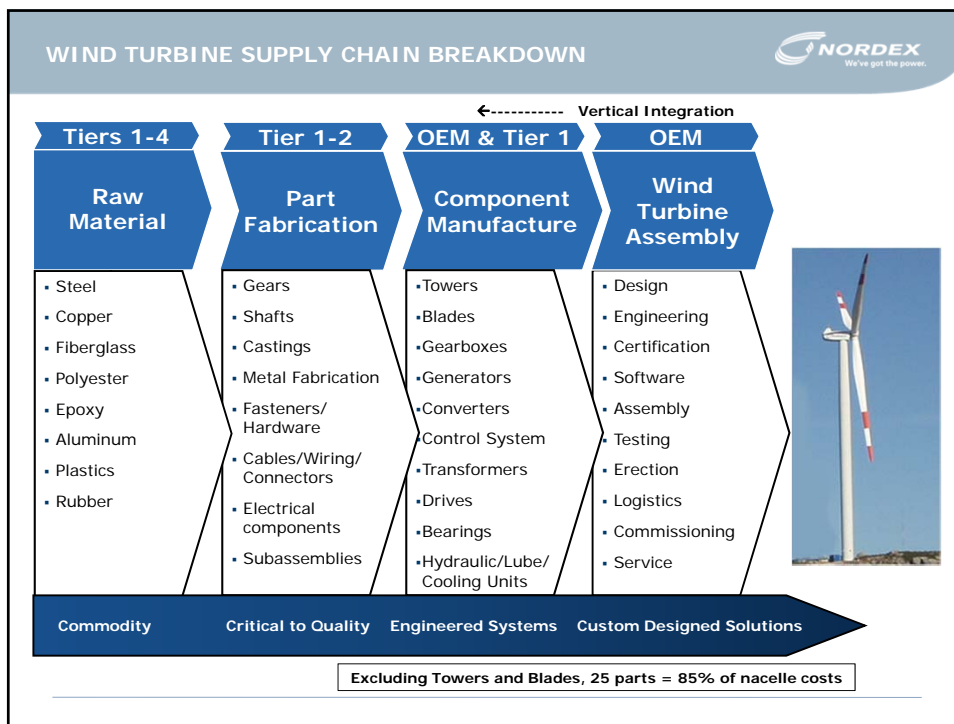
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2. US PRODUCTION
 2.1. US PRODUCTION



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SS6-14



Lone Star Transportation, LLC

Doug Miller

Vice President of Operations



Lone Star Transportation, LLC

Lone Star Transportation – Our Strength is our Philosophy.

Whether we have 1 load or 1,000, we treat them all in a turnkey manner, and we do so in multiple modes. No one carrier can do it all for everyone. We pride ourselves in committing to work that makes the most sense for our company and our customers. We take on only what we know we can do and we offer many solutions besides just transportation by way of truck. We are partnered with key players in the industry that help Lone Star offer global services if needed by our many customers.

Lone Star Transportation – Our Challenges to overcome as a carrier and as an industry.

- Drivers of the future –
 - Where will they come from?
 - Are you raising them?
 - Who will pay them?
- Equipment –
 - Components are increasing in size.
 - What are WTG Manufacturers doing about it?
 - What are Carriers doing about it?
- Planning
 - Why is this so difficult?
- Increased Regulations –
 - Hours of Service – Less Hours, More Work, Restrictions
 - CSA – Apple to Orange comparison of Carriers





CSX Corporation, based in Jacksonville, Fla., is a leading transportation company providing rail, intermodal and rail-to-truck transload services. CSX has unparalleled access to your customers and Eastern U.S. infrastructure.

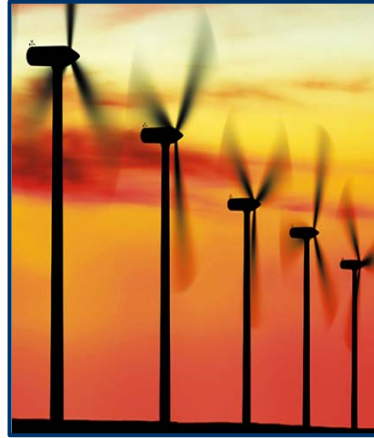
- **Customers:**
 - 2/3 Nation's Population
 - 3/4 Nation's Consumption
- **Eastern Wind Farm Demand**
 - Ohio
 - Northeast
- **Railroads**
 - Connects to all 6 Class I railroads
 - 240+ Shortline & Regional railroads
- **Ports**
 - All major project cargo on Atlantic Ocean



One of the benefits of incorporating rail into your wind energy supply chains are that railroads are the most environmentally friendly and energy efficient way to move goods on land.

- Green Math:
 - 3 X More Fuel Efficient
 - 1/3 the GHG & Particulate Emissions
 - 1% = 111M Gallons & 1.2 M Tons CO²

- Green Technology
 - GENSET Switch Loco
 - Loco Monitoring System
 - Trip Modeling
 - Idle Reduction Systems



How tomorrow moves [CSX]

Each wind supply chain solution has the challenges they face, for the railroad it is growing clearance envelopes

- Rail Clearance Envelope Factors
 - Curvature
 - Rail Size
 - Rail Usage (i.e. AMTRAK)
 - Infrastructure

- High-Wide Dimensions
 - **Width > 11'**
 - Height > 11'
 - **Length > 60'**
 - Weight > 150,000 lbs



How tomorrow moves [CSX]