Opportunities

Green Energy Manufacturing

WIndiana

July 22nd, 2009

Brevini Wind USA, Inc.

&

VAT-Group USA, Inc.
The state of U.S. Manufacturing?

“Say... What's a mountain goat doing way up here in a cloud bank?”
Despite the economic downturn Indiana continues to lead the nation in manufacturing output per capita. Manufacturing leads employee compensation in 64 out of 92 counties state wide.

*Indiana Business Research Center, Kelley School of Business, Indiana University*
Manufacturing in Indiana.
Manufacturing in Indiana?
Manufacturing in Indiana, what now?

INDIANA’S STRENGTH’S

- EE talent & expertise
- ME talent & expertise
- Skilled labor talent & expertise
- Hard part resources
- Manufacturing infrastructure
- Logistical infrastructure
- Geographical advantage
Manufacturing in Indiana, what now?

Indiana’s strengths applied to the realities of the day suggest manufacturing opportunities in emerging products:

- Advanced EE components
- Distributed Power options
- Next generations batteries
- Alternative energy options

- Green Energy Manufacturing
Green Energy Manufacturing, part of our future?

Wind Energy Manufacturing, is it real?

- The U.S. Department of Energy (DOE) recently released a report projecting that wind power could provide 20% of U.S. electricity by 2030.

- Getting wind where it currently stands today (producing just 1% of U.S. annual electricity) required a $25 billion investment.

- Consequently it will require roughly $500 billion in wind energy investment to reach that 20% target... And that's in the U.S. alone.
Wind Turbine Main Components:
- Tower
- Blades
- Rotor & Hub
- **Pitch & Yaw**
- **Main Drive**
  - Bearings
  - Castings
  - Forgings
  - Steel
- Nacelle
- Generator
- Controls

Green Energy Manufacturing, part of our future!
Currently, Brevini is the #2 producer of pitch and yaw drives worldwide!
Wind Energy Manufacturing in Indiana

Brevini Main Drives
Wind Energy Manufacturing in Indiana

Components will include:
- Gray Iron Castings
- Iron & Steel Forgings
- Drop forgings
- Bar steel
- Rings & seals
- Bearings

Certify (Din 3.1 B)

Steel 18Cr, 34Cr, 42Cr

3 M Solar Ring
Supplier Procurement Form

Supplier Category, check each box that applies
- Small diameter bar steel 48mm to 100mm 18Cr, 34Cr, 42Cr certify (Din 3.1 B)
- Large diameter bar steel 100mm to 763mm 18Cr, 34Cr, 42Cr certify (Din 3.1 B)
- Bearings
- Seals
- Gray Iron Castings
- Iron forgings
- Steel forgings
- Rolled Rings diameter 700 mm to 2200 mm
- Metrology services, testing instruments and materials
- Case Hardening, Hardening and tempering, Nitrating
- Painting materials
- Tooling supply
- Lubricants
- Other

Please submit to the Brevini Portion of the Work One website located at www.Work-One.org click on the Brevini logo and submit. You may also complete a hard copy of the form and submit at the supplier conference on Thursday July 23rd beginning at 1:00 PM EST at the Horizon Convention Center in Downtown Muncie IN.
Supplier Procurement Form

Supplier Category, check each box that applies
- Pipes and sheets in different qualities
- Bearings
- Seals
- Iron forgings
- Steel forgings
- Rings
- Material testing
- Machine supply
- Tooling supply
- Steel plates
- Electrical supply, wiring harness
- LED Lightening options
- Battery options
- Solar Panel options
- Other

Please submit to the VAT-Group Portion of the Work One website located at www.Work-One.org click on the VAT-Group logo and submit. You may also complete a hard copy of the form and submit at the supplier conference on Thursday July 23rd beginning at 3:00 PM EST at the Horizon Convention Center in Downtown Muncie IN.
Technical Specification **Gemini**

- Dimensions without basement (HxWxD in mm): 7500 x 2500 x 800
- Dimensions basement (HxWxD in mm): 800 x 1800 x 1800
- Height of Light Spot of the “arms”: 5900 mm
- Illumination radius of the “arms”: 2 x 25m
- Intensity of illumination: 1Lx at 25m
- Height of Light Spot (Middle Light): 3500 mm
- Illumination radius: 7m
- Intensity of illumination: 1 Lx at 7m
- Expected Life: 15 years
- Weight: 700kg
- Storage capacity: 2 x 230Ah
- Illuminant: LED
- Rotor: Savonius
- Power of the rotor: 20W at 6m/s
- Power of the photovoltaic module: 225 Wp
- Temperature range: -20°C to +40°C
- Sensor technology: Twilight Switch
Technical Specification Leo

- Dimensions without basement (HxWxD in mm): 6540 x 800 x 800
- Dimensions basement (HxWxD in mm): 800 x 1800 x 1800
- Height of Light Spot (Middle Light): 3500mm
- Illumination radius: 7m
- Intensity of illumination: 1 Lx at 7m
- Expected Life: 15 years
- Weight: 800kg
- Storage capacity: 2 x 130Ah
- Illuminant: LED
- Rotor: Savonius
- Power of the rotor: 20W
- Power of the photovoltaic module: 185 Wp
- Temperature range: -20°C to +40°C
- Sensor technology: Twilight Switch
Technical Specification - 20 kW Vertical Vane

- circa 7 kW
- Leistung bei 14 m/s
- circa 20 kW
- Anlauf 3 m/s
- Nominal 14 m/s
- Gewicht ~2600 kg
- Abmessungen 8,5 m x 4,3 m
- Oberfläche 36,5 m²
- Bremssystem nicht benötigt
- Generator PMG 20 kW
- Nominalspannung ~270 Vac
- Pole 80’
VAT-Group Supplier Conference

Supplier Procurement Form

Supplier Category, check each box that applies

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Green Energy Manufacturing in Indiana!

“If we pull this off, we’ll eat like kings.”