

Leadership in every link:

## Supply Chain, Cleantech and Advanced Manufacturing

Mention renewable energy, and most people think of wind turbines and solar panels, or biofuels refineries and utilities with hydroelectric dams. These common images are accurate enough, but they are seriously incomplete. They focus on products while ignoring one of the most important aspects of renewable energy -- the advanced manufacturing supply chain.

Every one of those iconic products fits into a long, often intricate sequence of activities. Supply chains consist of many links, operating inside companies and across entire industries. These days, many of those links are forged in advanced manufacturing techniques -- robotics, nanotechnology, specialty chemicals, or other advanced materials.

Finding the right leadership in this kind of fluid, complex landscape can be demanding. The obvious candidates, ones from the same sort of company who apparently check off all the right boxes, may have traits that may hamper them at a specific firm. At the same time, an executive from a seemingly unrelated industry may have expertise in another link of the supply chain, which makes them a surprisingly strong performer.

*Where* in the supply a company needs leadership is often important, too. The newer the enterprise, the more vital multi-talented executives become. For example, CFOs can be crucial components in helping a start-up or mid-level company flourish. In addition to managing a company's funding and finance, effective CFOs can state their case persuasively to VCs and other funders and investors. And the fact is, a strong CFO can emerge from almost any industry, a fact that firms in advanced manufacturing, cleantech and renewable energy need to remember.

For an executive search firm, an active awareness of what's needed in every link in the supply chain can make the difference between placing merely adequate executives, and bringing a transformative leader to a company.

In the experience of Tula International, an executive recruiter focused on advanced manufacturing and renewable energy, this awareness has led to successful placements from unusual sources.

## Wind

The wind industry is mature and growing in the US. According to the American Wind Energy Association, wind energy became the number one source of new U.S. electricity generating capacity for the first time in 2012, providing some 42% of all new generating capacity.

Today, the U.S. wind industry represents not only a large market for turbine installations, but also a growing market for manufacturing both in the US and globally. Over 550 factories across 44 states make components for wind turbines. This industry teems with a wide variety of companies, and many are leaders in advanced manufacturing.

Wind energy is a perfect illustration of supply chain complexity, since the turbines dotting the landscape contain many parts that require advanced manufacturing expertise, whether in robotics or nanotechnology. Some recent examples from Tula International's practice can illustrate this point.

**Schunk Graphite Technology of North America** uses state-of-the-art manufacturing practices to produce carbon, graphite, ceramic and complementary products for electrical, mechanical and thermal applications. In particular, they make the brushes used in wind power generation. These same brushes can play a role in many different kinds of generators.

Tula International placed the key account manager for Schunk North America Wind products group and a key account manager for the railways group. The firm has also found executives for Schunk in China, Germany and the Netherlands, including heads of logistics and purchasing.

**Beckmann-Volmer Konstruktionstechnik** is a leading source of metal frames and engineered parts for the wind turbine and other industries. The company operates in Poland and China, and has opened a manufacturing plant in Osceola, Arkansas.

The Arkansas facility specializes in steel and stainless steel weldments and machined components for rail, construction, wind and agricultural markets. From their central location in northeastern Arkansas, Beckmann Volmer has easy access to interstate, rail or barge transportation. This central location helps explain why the company is known globally for high quality and on-time delivery.

Tula International placed the General Manager for the North America Division of Beckmann-Volmer Konstruktionstechnik GmbH: the successful candidate was sourced from a similar US-based company. An even greater compatibility was cultural. The company's executives are all



expert welders. The new general manager had worked extensively as a welder himself and had kept abreast of the latest developments in the field, a shared background that really made the fit work.

**KettenWulf USA** is one of the world's leading manufacturers of conveyor chains, drive chains, and sprockets. More than 1,200 employees work in development, production and sales in 10 locations in Europe, America, and Asia. KettenWulf's products are used all over the world in various industries.

Kettenwulf's tough, high-performance chains are critical in the drive trains for wind generators, as well as in escalators and in bulk material handling.

Tula International placed two industry specific regional managers. All candidates came with excellent work experience and excellent contacts.

A Khosla venture (now closed down, unfortunately), **Danotek Motion Technologies** developed and manufactured a diverse portfolio of electromechanical equipment. They made permanent magnet generators, power control electronics and brushless motors for power-generation industries and advance-automotive applications, including wind turbines.

Danotek's permanent magnet generators were compact and lightweight. They simplified turbine design and construction and offered maximum efficiency from the wind to the grid. The company's full power converters were well-engineered for longer life and, when integrated with the Danotek PM generator, significantly enhanced the turbine-to-grid energy conversion. Danotek manufactured similarly efficient motors, drives, pumps and other accessories for electric and hybrid vehicles. In addition, its seasoned team of engineers could customize component packages for unique needs.

Tula found Danotek a Chief Technology Officer, a Vice President of Engineering, and various Application Engineers. Bernard Vanderlande of Tula noted, "Companies that are innovative in manufacturing can sometimes be innovative in searching for talent. That certainly was our experience with Danotek."

## Solar

The global market for solar photovoltaic panels (PV) has grown an average of dramatically over the past three years. PV has become sufficiently attractive as a power source that many well-managed companies are adopting it on a huge scale across the U.S. Given the current global



economic challenges, solar industry executives have achieved remarkable growth under volatile circumstances.

It's a dynamic industry marked by much variation, and many practitioners of advanced manufacturing contribute components to solar companies. But an overinvestment in manufacturing capacity and excess supply has rapidly driven down average panel prices. This is great for consumers, but solar panel manufacturers have struggled to remain profitable in this highly competitive environment.

At the same time, solar executives must work hard to keep up with the brisk pace of technological innovation. The improvements are coming rapidly, many of them in new kinds of manufacturing and specialty materials.

Tula's portfolio of clients contains several instances of this complex, supply chain-driven creativity at work.

A French-based developer, **Fonroche** provides clean energy to an increasingly international customer base, specializing in solar (photovoltaic and solar thermal systems), wind, biofuels, geothermal and off-grid lighting systems. In their solar business, they manage the entire value chain, from sourcing to design and manufacture, financing, installation, testing, operation and maintenance.

Tula has been instrumental in building their team in the US, starting with their general manager in North America. According to Vanderlande, "Tula found a particularly entrepreneurial candidate who was an excellent fit with the fast-moving culture at Fonroche."

**SolarMax**, a solar inverter company located in Biel, Switzerland, is also known as Sputnik Engineering. Inverters convert solar energy into mains-compliant alternating current that can power modern machinery and lighting. They must be built to precise tolerances.

Over the past six months, Tula has assembled the entire US team, including the President for North America, an R&D director, several regional business development managers, service managers for the East and West coasts, and an applications manager. Thanks to these placements, SolarMax was ready to go to market in the US with remarkable speed.

**J. Schneider Elektrotechnik GMBH** makes transformers for the solar business, as one branch of a much broader power supply business. Their products also include converters (whether AC/DC- or DC/DC), service-center electrical drives: repair shop, maintenance, of electrical motors. They make uninterrupted power supplies, inverters, regulators for line voltage



regulators and magnetic voltage. Their expertise also includes high current and high voltage products designed by their own development department, and systems for machine construction.

Tula International placed the General Manager for their North America Division, The successful candidate had built an impressive career at ABB before making the move. Vanderlande said, "This candidate hailed from a small town in southern Germany almost immediately adjacent to Schneider's headquarters. The company and the candidate had a cultural compatibility that literally went back to infancy."

**Exin Software** illustrates how expertise in a seemingly unrelated industry can participate in renewable energy. Based in the Netherlands, Exin's produces testing materials and certifies information technology professionals.

Among their offerings is an important certification for energy efficiency software that has a growing importance for solar managers.

Tula found them a Vice President Sales Global and 2 Regional Sales Managers for North America.

## Advanced biofuels/biomass

As an alternative to petroleum, the biofuels and biomass industry has grown rapidly. Output has increased exponentially, from 175 million gallons in 1980 to more than 13 billion gallons in recent years -- nearly 10 percent of the US motor fuel supply.

But trends at the moment are not favorable. During 2012, for the first time in 16 years, U.S. ethanol production declined. Economic necessity has given a tremendous momentum to advanced manufacturing enhancements in the biofuels and biomass sector. US ethanol makers are repurposing themselves as specialty chemical boutiques, focusing on other aspects of the Fischer-Tropsch hydrocarbons that are at the heart of biofuels.

Thus first-generation ethanol plants are adding specialty processes to make existing products more efficiently, or branching out into new, cellulosic products, or new feedstocks such as sorghum. Advanced milling techniques are one possibility. Algae-based fuels are another.

Few executives can navigate every phase of this complex and changing industry. Vanderlande notes, "Leaders often have advanced degrees in engineering, or chemistry, or robotics. The ideal executive has that rare combination of being a great leader while also understanding what the technology can do. That's what companies are looking for."



Tula has found this sector an interesting example of just how variegated supply chains can be, and how advanced manufacturing can make startling contributions.

**American Process**, producing sugar and ethanol from wood chips. American Process Inc. specializes in the development of technologies for the commercial production of sugars and ethanol from biomass. Their integrated development team has experts for the entire project life-cycle from laboratory research and detailed engineering to project execution and operations.

Tula helped them find a President.

**Desmet Ballestra** is a leader in processing fats, oils, biofuels. Based on Belgium's De Smet know-how as the world specialist in oilseed and edible oil processing plants, Desmet Ballestra Oils & Fats Division delivers tailor-made engineering and procurement services covering each step of the industry, from oilseeds preparation and extraction to oil processing plants including refining and fat modification processes. Desmet Ballestra Oils & Fats masters the processing of 40 raw materials, of which soybeans, sunflower seed, rapeseed, groundnuts, cottonseed and palm oil are probably the most popular. The Division has supplied small and large plants to some 1,700 oil millers in 150 countries, covering over 6,000 process sections.

Tula located a President for their North American operations, one who specialized in building ties with investors and sources of financing. It's a small world where all the participants know each other, but very few of them have all the talents to master the entire process. Tula's placement had really mastered the entire spectrum.

Many sustainability-oriented companies are links in the biofuels supply chain. One example from Tula's client roster is **Polytan**, which manufactures artificial grass for sports fields. This substance is a byproduct of the biofuels supply chain.

Tula found their CEO.

## Geothermal

The US possesses tremendous geothermal energy sources, but conveying this energy to consumers is a real challenge. Though confined to areas where the right geological conditions are available, geothermal is a tremendous source of clean, pre-existing energy.

Geothermal companies are also experts at recovered-energy technologies, a technique that has very wide application in a great many industries, and one where advanced manufacturing often has a role to play.



**Ormat Technologies, Inc.** (NYSE: ORA) is a world leader in the geothermal. They have over four decades of experience in the development of state-of-the-art, environmentally sound power, primarily in geothermal and recovered energy generation. In addition to designing, developing, building, owning and operating geothermal energy and recovered energy-based power plants in the United States and other countries, Ormat also designs, manufactures and sells power units and other power generating equipment for geothermal power plants and recovered energy-based electricity generation. Thus, they are an advanced manufacturer, too.

Ormat is today's only vertically-integrated provider of geothermal and recovered energy-based equipment, services and power that designs, develops, builds and manufactures most of the equipment used in its plants. The in-depth knowledge gained from these operations gives them a competitive edge by enabling efficient maintenance and timely response to operational issues.

Tula found Ormat a key project management executive.

## Advanced manufacturing

The lag between a discovery or technical improvement and its arrival in the factory is growing shorter. Many companies are keenly aware that a rapid uptake of cutting edge technology is one way they can stand out in a crowded market. Some companies possess a cultural mindset too impatient to wait for a technological development to make its methodical way to the market. They want to make the leap sooner.

Indeed, a mastery of advanced technology is a major method not only for sharpening a company's competitive stance, but also for improving productivity, and for bringing exciting products to consumers. Leaders in advanced manufacturing have a keen will to hasten the process.

As a sector, advanced manufacturing is quite diverse. It can be found wherever innovations in science and technology are applied rapidly to making products. Tula International has partnered with companies that have committed themselves to cutting edge technology in producing their products.

**Flexial** specializes in welded bellows that are gas-tight, a highly demanding type of manufacture. A leader in bellows-related products, Flexial has displacing the largest and most entrenched bellows companies on the world's most significant programs.



Tula International placed the CEO of Flexial, a recently acquired company by the BOA group (the successful candidate was sourced from Moog, Inc.) and a senior business development manager for America BOA in Georgia.

**Freudenberg NOK** makes sealing technologies. A leading producer of elastomeric materials and precision molded products for the aerospace, aftermarket, automotive, fluid power, appliance, energy, food and beverage, construction, recreational, industrial and chemical industries.

With Tula's help, they identified and hired a plant management executive.

**Libbey** is a well known glassware maker and a keen practitioner of advanced manufacturing. Tula placed a Marketing Manager and Executive in charge of Lean Management.

**Superior Essex** is a global leader in the design, manufacture and supply of wire and cable products. Magnet wire is an insulated copper or aluminum conductor used by major original equipment manufacturers and distributors, crucial for a number of products: industrial motors, transformers and generators, automotive applications, electrical coils and controls, and appliances. It is also used in motor and transformer repair. The Magnet Wire and Distribution business segment of Superior Essex is the world's largest producer of magnet wire.

Tula found their Global Strategic Sourcing Manager.

**Titan Cement** is an independent multi-regional producer of cement and related building materials. Headquartered in Greece, with a track record of continuous growth since its establishment in Greece, 110 years ago, it has expanded its production and distribution operations into 13 countries, employing more than 5,640 people, with a consolidated sales of € 1.091.404.000 (2011).

Tula found their senior executive for North America.

## Light-Emitting Diodes

Light-emitting diode technology, or LED, has the potential to transform the lighting industry, which today accounts for nearly a fifth of overall electricity use (and about 6% of greenhouse gas emissions). For the same lighting levels, LEDs can consume as little as a third of the electricity of conventional lights, with much longer life spans. They also do not contain mercury, eliminating a major source of pollution.



In the US, LED lighting has the potential to dramatically cut US annual energy costs the more fully it penetrates the lighting market. This is an enticing opportunity, still in its early stages.

**Saif** is a division of SSelf, a Chinese based company with an office in Atlanta, and the growth of LED lighting.

Tula found them a VP of sales for LED lighting. Bernard Vanderlande says, "At Tula, we believe that LED lighting is a natural home for many executives who have proven themselves in the solar business. This trend is in its infancy."

## Conclusion

Whether the sector is renewable energy, cleantech, advanced manufacturing, the supply chain is much broader and intertwined than people realize. Companies that find leaders with mastery of several links of the chain have a tremendous competitive advantage.

As a result, there is always a need for skilled, passionate, out-of-the-box thinkers in all these fields. Leaders must understand not only what the technology can do, and be able to effectively manage people – leaders must also use innovative thinking. Vanderlande says, "Leaders must think about using the technology in innovative ways. They are constantly asking good questions, such as 'Are we making it the right way? Are we using the right technology? Are we getting everything out of the equipment? Are we looking at the right people?'"

As Bernard Vanderlande of Tula International declared, "An executive recruiter that can identify these individuals, and also find who have a snug cultural fit with the companies searching for talent, can help everyone flourish. We find that advanced manufacturing is a fertile source of the thinkers that every company needs. Especially in renewable energy."

