

Reprint

Green Manufacturing in the Wire, Cable and Harness Industry

As featured in the
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Hueson Wire Manufacturing

As a custom wire and cable job shop Hueson Wire of Northbridge, MA frequently gets inquiries to quote on some pretty unusual items. In fact, since the day they opened in 1989 their mantra was that they supply the wire and cable the big guys won't bother with. Low minimums, quick turn around and rock bottom pricing was the creed they opened under and still operate by today. So it seemed like another run of the mill call when a local OEM called 16 months ago seeking their assistance with a new project.

This particular company wanted to replace their entire line of PVC wire and cable with an environmentally friendly alternative. To Hueson's General Manager, Brian Hanlon, it seemed simple enough, so he promised them he would take a look at a few specialty compounds and get right back to them. Little did he know that this would be the beginning of a journey in which this small 15-employee company would become the pioneers of eco-friendly wire and cable. Recognizing that this could be the niche market Hueson had long been searching for they soon dedicated most of their energy into researching and insulating new compounds and modernizing manufacturing techniques. Almost a year and a half later Hueson Corp., complements their job shop diversification with a nice line of eco friendly products. Their customer base has grown and they are working with several resin manufacturers to create and obtain additional ULAWM styles.

This is a perfect market for Hueson, according to company president Dan Hughes, we see it as an emerging market, yet a market that will probably not be large enough to entice the mass producers to get involved. Then again, you never know.

Marketing Sustainability

From a marketing perspective **going green, sustainability and eco-friendly** are red hot buzzwords. Yet, caring for our environment is not new to manufacturing. Many of us remember the Keep America Beautiful campaign as Chief Iron Eyes Cody canoed down a polluted river landscaped with smoke stacks as a tear dropped from his eye. Soon after, regulations and public awareness contributed to cleaning many rivers, streams and the air above.

The most recent "green wave" originated with concerns of global warming. Further intensified by the escalating costs of energy, it is now one of the leading agendas of the current US administration with billions of dollars allocated. There is no denying that we are in the midst of "all things green." Peel away the layers and one has to admit that it simply makes sense that we continue to be concerned about how we treat the environment.

"Green Manufacturing" What exactly does that mean? Green Manufacturing is about choices in manufacturing methods that support and sustain a renewable way of producing products and/or services that do minimal harm to the environment. Green or sustainable manufacturing is often looked at as a journey or a philosophy rather than a destination, as it may not be possible to totally achieve. There is very serious interest in green manufacturing within the manufacturing community. We are currently seeing a major shift in philosophy, acceptance, and emphasis.

Green Manufacturing can be broken into three segments; conservation of energy, scrap reduction, and green product design. Conservation of energy is supported by a reduction of energy use by supplemental means such as solar or wind power, water stewardship or simply by dimming the lights.

Scrap reduction is critical and a great example is the Subaru plant in Indiana. Of the solid waste that the factory still generates, 99.9% is recycled or used by other companies as manufacturing inputs or as raw materials that they process to resell.

When discussing sustainability or Green initiatives it is important to focus on the disposal of manufactured product. This stage has the most environmental impact in the life cycle of wire. A critical segment of being environmentally responsible involves the ultimate disposal of materials. Landfills are a finite resource and today's disposable society gives little attention toward the big picture. The term Cradle-to Grave is often applied and many environmentalists as well as the EPA are now conducting Life Cycle Analysis or LCA's to study the long lasting impact of products on the environment.

In November 2008 CBS 60 Minutes aired a segment about Guiyu China, a small town that has become an electronic (E-waste) landfill. This documentary can be viewed through YouTube or the 60 Minutes Web Site to understand the environmental challenges of the present practice of cradle to grave. This is a very alarming piece that brings to the forefront the problems of where e-waste ends up. Of significant interest are the mountains of wire harnesses in the landfills pulled from computers and consumer electronics shipped to China from the United States.

As a result of the discoveries of these e-waste landfills many consumer watchdog foundations have been diligently lobbying and bringing attention to issues that have a direct impact on the wire, cable and harness business and they are finding a captive audience in Washington. The more pronounced initiatives that could affect our businesses are The Center for Health Environment and Justice's (CHEJ) campaign against PVC and Greenpeace's Guide to Greener Electronics and their Toxics campaign. Both Greenpeace and CHEJ identify PVC as a toxic and are lobbying aggressively against the use of PVC.

PVC (polyvinyl chloride)

Greenpeace has designated PVC as **The Poison Plastic**. Hundreds of articles and studies have been published on the dangers of PVC in processing, use and disposal.

PVC uses more toxic ingredients for its manufacture because in addition to carcinogens like vinyl chloride, it also requires plasticizers to be flexible. These plasticizers are more toxic than the base plastic itself. Besides the manufacturing hazards, dioxin and other toxins like DEHP (a plasticizer connected to reproductive illness) outgas, leach, and flake off PVC during its use. When thrown away, these chemicals also leach into groundwater in landfills. This is why PVC is rated as the worst on the list.

PVC in the Wire and Cable Industry

PVC is by far the most dominant choice for insulation and jacketing in the wire and cable industry. It is estimated that

600 billion lbs of PVC is consumed annually by the wire industry. Tremendous attention and pressure is being placed on the recycling policies of electronics companies in hopes these scrap yards throughout the third world countries will disappear. They are taking to task the electronics industry by ranking the lifecycles of their products. As an example 7 of the top 10 global PC manufacturers have set goals to phase out PVC, where viable alternatives are identified. They represent over 50% of the worldwide market share for PCs. Initiatives are active right now by organizations like HDP Users Group International and The International Electronics Manufacturers Initiative (iNEMI.org). Spearheaded by Dell, Apple and HP and supported by cable manufacturers including Hueson Wire, our goal is to find replacements for the PVC wiring, monitor cables and power cords used with PC's.

Cradle to Cradle

The challenges of Cradle to Grave are much deeper than the wire and cable industry alone as environmentalists look for solutions to the over abundance of disposing plastics. It is estimated that upwards of 25% of landfill waste is plastic. In a revolutionary book "Cradle to Cradle" written by German Chemist Michael Braungart and American Architect William McDonough, the driving theme is to initiate intelligent design into product development. The seeds have been planted as many companies think more about the potentials of recycling over disposal as design new products.

Many recent trends originated in Europe including WEE, RoHS, REACH and now The End of Life Vehicle (ELV) Directive. The US usually lags behind these initiatives but gradually accepts and embraces them. As a result of these directives very few products contain lead these days and many phthalates are in the process of being eliminated. The ELV Directive requires that auto manufacturer's sets higher reuse, recycling and recovery targets and limits the use of hazardous substances in both new vehicles and replacement vehicle parts. As a result of ELV companies like Delphi have taken a lead by utilizing recyclable insulations on their lead wire to replace PVC and non recyclable cross linked wires like GXL, TXL and SXL. The ELV is a perfect scenario envisioned in the Book "Cradle to Cradle."

What is Environment-Friendly Wire and Cable?

The life cycle of wire and cable consists of four stages:

- (1) raw material,
- (2) processing,
- (3) usage, and
- (4) disposal.

As disposal has the biggest impact in the life cycle of wire

most of the emphasis in bringing environmental friendly products to market has been in this area. Conventional PVC and cross-linked polyethylene's are replaceable by TPE's, Polyphenylene Oxides (PPO) and derivatives of polyethylene. Most of the resin and compound manufacturers are currently dedicating R&D time and funds to develop alternative products.

**Opportunities for Environmentally
Green Eco Friendly Wire**

While today's opportunities for selling green wire are still limited, we believe it to be an emerging market with several signs of future opportunities. Many leading manufacturers including General Electric's Ecomagination, Johnson Controls, Rockwell Automation, Baxter Int'l and Whirlpool have

made commitments to sustainability and others are following by going green with at least some segment of their product line.

Renewable energy manufacturers catering to solar, wind power and geothermal are excellent candidates to "walk-the-walk". Automotive tiered suppliers are already reacting to green initiatives like Europe's ELV Directive. The Toyota Tundra is wired with Noryl a recyclable, halogen free very thin wall wire. With an insulation 1/2 the thickness of conventional xlpe wires Noryl allows a 40% reduction in the wire harness bundles.

Hueson Wire is a wire and cable job shop manufacturer in Northbridge, MA. You can contact them from their web site at www.huesonwire.com.