



# Thermal News Winter 2013

*closing the loop on thermal solutions*

**Welcome!** Durex Industries Metrology Laboratory and two new flexible heater technologies are featured in this issue of Thermal News. We trust that you will find this information valuable for your businesses.

## Durex Industries Metrology Laboratory

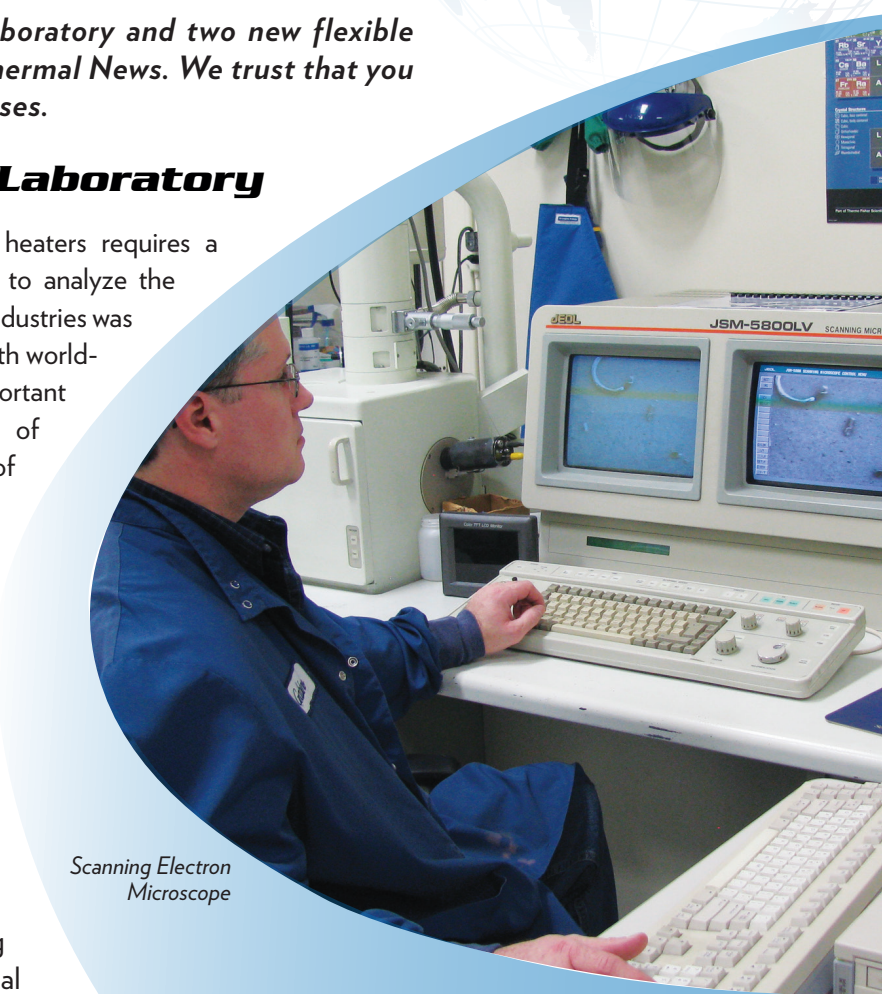
Designing and manufacturing high performance electric heaters requires a working knowledge of material microstructures and ability to analyze the microstructures throughout the life cycle of a heater. Durex Industries was founded in 1980 with the goal of providing customers with world-class design and manufactured product excellence. An important aspect of achieving heater excellence was development of Durex' metallurgical capabilities. From incoming inspection of raw material to manufacturing process validation, and root cause failure analysis, Durex' metrology lab has proven to be an excellent resource for product development, product trouble shooting, and quality validation.

In 2012, Durex Industries consolidated and expanded their test and analysis capabilities into a new 2,000 sq. ft. Metrology Laboratory. The goal was that all product lines and customers would benefit from consolidation of our expertise and capabilities.

A scanning electron microscope is a recent addition to Durex Industries' analysis capabilities. The scanning electron microscope has increased response to internal and customer requirements for material and performance analysis. The results of metallurgical analysis are pictured here. On the left is an example of carbon penetration on low carbon stainless steel tubing that resulted in the formation of chrome carbides on the surface layer. On the far right is an example of stress corrosion cracking of a high nickel alloy.

Recognizing Durex Industries' advanced metrology capabilities, customers have asked Durex to provide analysis services on their products. Metrology capabilities that are often performed include:

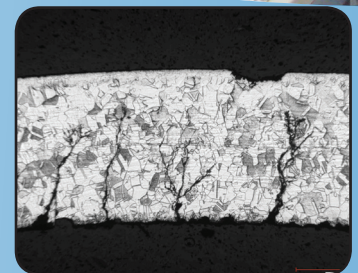
- Microstructural analysis such as grain size measurement, inclusion level, and weld penetration.
- Scanning Electron Microscope Imaging
- EDS elemental composition analysis
- Thermal Imaging (FLIR)
- X-Ray Imaging
- Finite Element Analysis
- Micro-hardness Analysis



Scanning Electron Microscope



Carbide Precipitation



Stress Corrosion Cracking

*"Durex Industries continues to be an industry leader by pushing the limits of thermal technology."*

## ***New Product Developments at Durex Industries!***

*From technology development to product innovation, Durex Industries continues to develop solutions that can be applied to challenging thermal applications. **Elastic Wrap Heaters** and **Silicone Foam Insulation Heaters** are two new product forms that Durex Industries developed.*

### ***Elastic Wrap Heaters***

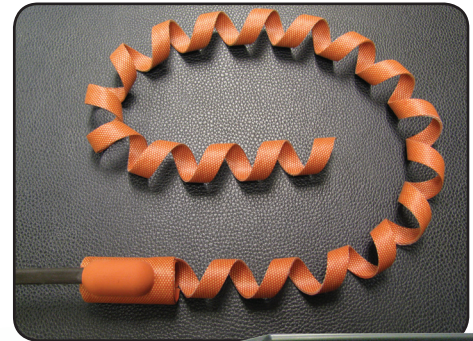
Durex developed the Elastic Wrap Heater (EWH) technology for applications that require freeze protection or to prevent condensation. Based on silicone rubber heater technology, lengths of the heater are coiled similar to a telephone cord. The elasticity of the cord facilitates easy wrapping of the heater around pipes, tubes and fittings. The molded end protector snaps around a pipe to provide structural support for the lead wires. These 120 and 240 VAC heaters are available in widths up to 1.0 in. (25.4 mm) and straight lengths up to 125 in. (3175 mm).

Customers have successfully applied the EWH heaters in applications such as plumbing systems for water treatment and semiconductor processing equipment. EWH heaters are typically used on piping from 0.25 in. (6.35 mm) to 4.0 in. (10.16 mm) in diameter. The ease of installation and removal, along with the inert characteristics of silicone rubber make the EWH heaters an excellent value. ■

### ***High-R Value Silicone Foam Blanket Heaters***

Many thermal applications require insulation to reduce costly heat loss that sub-optimizes the heaters performance and to provide touch safe protection in the work environment. Durex Industries developed processes for manufacturing high-R value silicone foam insulation and married the foam insulation with silicone rubber heaters. The foam insulation and heater are molded into a homogeneous assembly that may include temperature sensors, thermostat, thermo-fuses and other components. By molding the assembly, we achieve a shape that can fit to the contours of the heated parts and provide the maximum thermal transfer and temperature uniformity.

Recently, an OEM had a freeze and condensation prevention battery heating application. They had tried heating the outside of the battery with traditional battery heaters, but were having heater failure due to damage during periodic maintenance. Also, mechanical thermostat failures resulted in frequent heater assembly replacement. For the application, Durex Industries designed a foam insulation silicone rubber heater solution that could easily wrap around the battery. The heater design also allowed for a replaceable thermostat that was located in a pocket on the side of the foam. This solution simplified battery maintenance and significantly reduced cost of ownership. ■



*Durex Industries EWH Heater*



*57.0" x 10" Battery Heater Assembly*

*Check out our growing list of standard and custom thermal solutions online at [www.durexindustries.com](http://www.durexindustries.com) or talk with our Durex Application Engineers at 847-639-5600.*

**Contact Durex Industries for all your heater, sensor and control requirements.**



*For more information, visit our website! [www.durexindustries.com](http://www.durexindustries.com)*

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