

# Green technologies and Therminol heat transfer fluids: **A natural fit**

Engineers and scientists continue to find new and innovative methods to reduce the carbon footprint and make the world more sustainable. Heat transfer fluids play a significant role in these projects.

Eastman is there to support a variety of projects that require high-temperature operations with Therminol heat transfer fluids and the TLC Total Lifecycle Care program.



## Industries and applications include:

- Concentrated solar power to create energy
- Organic Rankine Cycle (ORC) to recover waste heat for energy
- Biofuels created from biomass
- Desalination technologies to create fresh drinking water
- Recycling technologies designed to divert waste from landfills and create new products.

## Making what was old new again

A new area of focus for Eastman Therminol® heat transfer fluids is landfill divergence, which provides an opportunity to reduce the need for land to dispose of waste and the virgin raw materials needed to create a new product. One example of such a project is the one to convert waste polymers to industrial waxes at GreenMantra Technologies of Brantford, Ontario, Canada.

GreenMantra's thermocatalytic depolymerization process converts recycled plastics into industrial products such as synthetic waxes, diverting hard-to-recycle plastics like film and grocery bags from landfill. GreenMantra is the first company to commercialize the manufacturing of synthetic waxes from recycled plastics. Currently, GreenMantra's Ceranovus brand of waxes has applications in plastic processing, adhesives, and asphalt modification. The materials processed by GreenMantra span a wide variety of plastics feedstock, including pre- and postconsumer polyethylene and polypropylene.

The wax world is a fossil-fuel-dominated industry with almost 97% of waxes, a \$10 billion market, made solely from crude oil, natural gas, or coal. GreenMantra manufactures wax that is made entirely from recycled raw material so that they can offset the fossil fuel needs of the wax markets. GreenMantra processes thousands of

tonnes of plastic waste per year and approaches 100% conversion levels—higher than most competitor companies. While wax is typically produced by oil refineries, there has been a lower supply of wax and a rise in product price. In addition to deriving its products from spent plastic sources, GreenMantra's patented process is more cost-effective than conventional wax manufacturing. A recent expansion at the GreenMantra plant to create a semicontinuous process for the conversion resulted in the need for two stages of heating.

With a wide range of mid- to high-temperature Therminol heat transfer fluids, Eastman was able to work with the engineering company assigned to the project as well as GreenMantra to recommend the most effective heat transfer fluids for the applications. Eastman also provided GreenMantra guidance on heat transfer fluid system design, operations, and maintenance via an on-site seminar prior to the start-up of the new facility.



*GreenMantra manufactures wax that is made entirely from recycled raw material.*

Amalia Gil, engineering lead at GreenMantra, was very appreciative of the Therminol engineering seminar that was presented by Brad McCann, sales manager for Therminol heat transfer fluids in Canada, as well as the technical support received by Conrad Gamble, senior technical support specialist. Gil stated, "Eastman has been very helpful throughout the entire expansion project. From the start, Eastman personnel provided all required information and guidance on what thermal oils to use for the design of two separate heat transfer systems. Once procurement was finalized, even without GreenMantra's request, Eastman arranged a seminar to outline the care and sampling

of thermal oils to ensure long equipment uptime. Lastly, Eastman has given outstanding support during commissioning, expediting oil shipments and providing additional information and guidance to solve issues well outside of their scope. With GreenMantra being a company on their first use of thermal oils, I feel confident that with Eastman we will achieve good onstream performance.”



**GreenMantra Technologies Inc.**  
81 Elgin Street  
Brantford, ON. N3S 5A1  
[www.greenmantra.ca](http://www.greenmantra.ca)

## Sustainable solutions: Why Eastman?

Eastman recognizes the unique challenges presented by green technologies. The Therminol heat transfer fluid team of dedicated experts can offer a broad portfolio of products and expertise to deliver the customer the best solution—specific to their application.

McCann explained, “It’s no surprise that Eastman and Therminol fluids were a natural fit for this project involving waste divergence and recycling, as Eastman has won numerous sustainability awards and creates an environment within the organization to establish a sustainable future for all stakeholders.”

For the fifth consecutive year, the U.S. Environmental Protection Agency (EPA) recognized Eastman Chemical Company with a 2016 ENERGY STAR® Partner of the Year Award for continued leadership in protecting the environment through superior energy efficiency achievements. In 2016, Eastman received its third consecutive ENERGY STAR Partner of the Year—Sustained Excellence Award, the EPA’s highest ENERGY STAR honor. With awards in 2014 and 2015, Eastman became the only chemical company to receive the ENERGY STAR Partner of the Year—Sustained Excellence Award.



Eastman has been working with several companies globally on heat transfer fluid systems that convert lignin from wood to biofuel, as well as companies converting municipal waste to energy. McCann states, “For the immediate future, Eastman looks forward to working with these companies on pending clean energy projects to create Therminol heat transfer fluid systems that are well designed, maintained, and managed. The benefits to the clean energy market are heat transfer fluid systems that run safer, have faster start-up, deliver better onstream performance, and require less fluid and energy. We encourage all stakeholders in new projects to contact the Eastman technical support team in the planning stage of new projects involving HTFs to maximize the value of the TLC program from Eastman.”

For more information or to find the sales or technical contact nearest you, visit the “Contact us” page on our website:  
[www.therminol.com](http://www.therminol.com).

**North America**  
Solutia Inc.  
A subsidiary of Eastman Chemical Company  
575 Maryville Centre Drive  
St. Louis, MO 63141 U.S.A.  
Telephone:  
Customer Service, 800-426-2463  
Technical Service, 800-433-6997  
Fax: Customer Service, (1) 314-674-7433

**Latin America**  
Solutia Brasil Ltda.  
A subsidiary of Eastman Chemical Company  
Rua Alexandre Dumas, 1711—Birmann 12—  
7º Andar 04717-004  
São Paulo, SP, Brazil  
Telephone:  
Brazil, 0800 55 9989  
Other Locations, +55 11 3579 1800  
Fax: +55 11 3579 1833

**Europe/Middle East/Africa**  
Solutia Europe SPRL/BVBA  
A subsidiary of Eastman Chemical Company  
Corporate Village—Aramis Building  
Leonardo Da Vinci laan 1  
1935 Zaventem, Belgium  
Telephone: +32 2 746 5000  
Fax: +32 2 746 5700

**Asia Pacific**  
Eastman (Shanghai) Chemical  
Commercial Company Ltd.  
Building 3, Yaxin Science & Technology Park  
Lane 399 Shengxia Road  
Pudong New District  
201210, Shanghai, P.R. China  
Telephone: +86 21 6120 8700  
Fax: +86 21 5027 9229



### Eastman Chemical Company Corporate Headquarters

P.O. Box 431  
Kingsport, TN 37662-5280 U.S.A.

U.S.A. and Canada, 800-EASTMAN (800-327-8626)  
Other Locations, +(1) 423-229-2000

[www.eastman.com/locations](http://www.eastman.com/locations)

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