ecomagination℠
a GE commitment

ECOMAGINATION BACKGROUND INFORMATION

"I never perfected an invention that I did not think about in terms of the service it might give to others... I find out what the world needs, then I proceed to invent."
- Thomas Edison, founder, The General Electric Company

"We are going to solve tough customer and global problems and make money doing it."
- Jeff Immelt, Chairman and CEO, The General Electric Company

Overview

Since Edison's time at the leading edge of discovery, GE's mission has remained steadfast: to not only meet the world's changing needs, but to anticipate them.

Today, the global environment is in urgent need: skyrocketing demand for oil and natural gas is expected to exhaust known reserves by 2045; subtle changes are emerging in the global climate; and lack of access to clean water currently endangers more than a billion people – a mounting crisis where, by 2025, half the world will live in water-stressed areas.

To provide imaginative answers to these mounting challenges to our ecosystem, GE is today launching **ecomagination** – a major environmental commitment that will draw upon an unparalleled legacy of invention and the strength of 300,000 employees worldwide.

Only GE...

Due to the enormous range and magnitude of its businesses, perhaps only GE can provide so much potential promise.

GE already builds among the world's most energy-efficient aircraft engines, is a leading provider of wind energy systems, produces some of the world's most efficient household products and is expanding its offerings of cleaner technologies, such as water treatment systems and cleaner-coal power generation. These products generate $10 billion in annual revenue for GE today – equal to that of a Fortune 200 company.

With ecomagination, GE will significantly expand these offerings – imagining and building innovative solutions that help customers meet environmental challenges and improve their operating performance, while also benefiting the company and the world. As a global leader in energy, technology, manufacturing and infrastructure, GE is uniquely suited to help solve environmental dilemmas – today and for generations to come. Ecomagination, which is based on GE's belief that solving environmental problems is good business, constitutes a significant growth strategy for the company.

GE's commitments

Ecomagination consists of four distinct, measurable behaviors:

- **Doubling investment in R&D.** GE will invest $1.5 billion annually into cleaner technologies by 2010, up from $700 million in 2004.
- **Introducing more ecomagination products.** GE will double the revenue goal for products and services that provide significant and measurable environmental performance advantages to customers — from $10 billion in 2004 to at least $20 billion in 2010.
- **Reducing greenhouse gas emissions and improving efficiency.** GE is committed to offering products and services to help customers reduce their greenhouse gas emissions and decrease the intensity of the company's own emissions. With ecomagination, GE has committed to reduce greenhouse gas emissions by 30-40 percent by 2008, an absolute emissions reduction of 1 percent by 2012, while improving energy efficiency of operations by 4 percent annually.
- **Keeping the public informed.** GE pledges to publicly report its progress in meeting these ecomagination goals on an annual basis.

ecomagination products:
Environmental products for today… and tomorrow

GE's portfolio of ecomagination products will improve customers' operating performance by lowering operating costs as well as improving their competitive position and value proposition. The products also will significantly and measurably improve customers' environmental performance by enhancing quality over installed base and/or recent market offerings, being 'inherently' green and able to meet an independent, third-party standard. Below is a sample of products currently in GE's ecomagination portfolio.

Transportation

- GE produces some of the world's most powerful, energy-efficient, cleanest and quietest aircraft engines. GE pioneered the use of composite materials in jet engines. These blades are used in the **GE90-115B aircraft engine**, the world's most powerful engine. The next generation of engine—the **GEnx engine**—will extend this technical breakthrough to both the composite blades and fan case. With advanced compression and combustion technology, this engine will achieve dramatic gains in fuel efficiency and durability, with significantly lower emissions than any engine in its class.
- The **LM2500+ marine gas turbine** powers cruise ships using a highly efficient combustion process and high-quality fuel to make trips virtually sludge- and smoke-free. On a typical trans-Atlantic cruise, a ship powered by LM2500+ turbines would operate far more cleanly than a comparable ship powered by diesel engines – reducing particular matter emissions by nearly 2 metric tonnes (62 percent less), nitrogen oxides by about 77 metric tonnes (67 percent less), and sulphur dioxide by 118 metric tonnes (93 percent less).
- GE has developed **a reusable wire coating** for automotive and other uses that is halogen-free, thereby reducing dioxin production during manufacturing. GE's NORYL wire coating is up to 25 percent lighter than current alternatives, which could reduce vehicle weight and help improve gas mileage.

Energy

- GE's **H System** is the future of power generation technology and it is here today. It is one of the world's most advanced gas turbine combined cycle technology platforms. It is the first turbine system capable of achieving 60 percent efficiency. GE's 9H gas turbine combined cycle system (operating 8000 hours per year) can generate enough electricity to power 1.1 million European

Union homes. Producing this much electricity with a 9H gas turbine combined cycle system—instead of a typical gas turbine combined cycle system—reduces carbon dioxide emissions by more than 87,000 metric tonnes each year.

- GE is one of the world's largest manufacturers of renewable energy technologies. GE's global installed base of **wind turbines** provides the same amount of electricity annually as would be used to power about 4.6 million average European households. GE also is an innovator in hydroelectric power and offers a wide range of **solar electric solutions** that enable customers to generate power from the sun with zero noise pollution or air emissions. GE's installed photovoltaic systems globally generate the same amount of electricity each year as required to power over 29,000 average European Union homes.
- With Integrated Gasification Combined Cycle (IGCC) technology like GE's **"Cleaner Coal" IGCC technology,** power plants will be able to convert coal into a cleaner-burning fuel prior to combustion, as opposed to having to burn coal directly. The cleaned fuel is then burned in a gas turbine combined cycle system to generate electricity. Compared to pulverized coal plants, plants that use IGCC processes emit less sulphur dioxides, nitrogen oxides, mercury and particulate matter, use less water, and can be designed to capture carbon dioxide with significantly less cost-of-electricity impact.

Water

- GE's **advanced membrane technologies** are used in a wide range of applications, from purifying water for soft drinks to removing harmful chemicals from wastewater. Each year, GE's advanced membrane technologies help companies reclaim 81 billion litres of wastewater, conserving precious water.
- GE's **desalination technology** removes saline from brackish or sea water and creates fresh water for drinking, irrigation and industrial use. GE's installed desalination platforms reclaim more than 7 billion litres of water a day for industrial, agricultural and drinking uses. That amount is equal to the daily water required for those uses by more than 150 million people.

Consumer products

- GE makes more than 50 models of energy-efficient **compact fluorescent light** bulbs that are comparable to our traditional incandescent bulbs in brightness and features. Compact fluorescent light bulbs such as those offered by GE provide energy savings of 70-80 percent and last from six times to up to ten times longer than incandescent light bulbs. If every household in the U.K. replaced just one 100-watt incandescent light bulb with a comparable-brightness 20-watt compact fluorescent bulb like those offered by GE, over the bulb's 6000-hour lifetime, we would save enough energy to power nearly 600,000 average U.K. homes for an entire year.

Other ecomagination products

- **Infusing plastic with pigment** greatly reduces paint in the automotive manufacturing process. Using GE's polymer with super-high gloss, metallic colors, and excellent scratch, chemical and weather resistance reduces the volatile organic compound emissions associated with conventional paint. Furthermore, if 10 percent of all cars newly registered in Europe in 2005 had been built with body panels incorporating LEXAN SLX film rather than painted steel, auto manufacturers could have reduced volatile organic compound emissions by almost 2000 metric tonnes (based upon average volatile organic compound emissions of 1.4 kg per car).
- **SILWET Silicone Super Spreader** technology allows water to penetrate the smallest of places. By improving the reliability and efficiency of the agrochemical application process, SILWET has

the potential to reduce the amount of water needed to apply pesticides to crops by up to 70 percent and also reduce a grower's pesticide use.

GE is pushing its research and technology farther ahead to develop new ecomagination products.

- GE has one of the world's leading research projects on advancing cleaner-burning **hydrogen** as a transportation fuel. GE's research focuses on the production, distribution, storage and use of hydrogen.
- GE is working in partnership with leading experts at institutions such as Stanford University, where a $225 million research project is aimed at finding **lower-emission energy technologies.**
- GE scientists are developing **fuel cells** that have the potential to deliver up to 5 megawatts of electricity, enough to power a neighborhood of 500 homes.
- Despite already having some of the most environmentally advanced locomotives, GE also is working on the next-generation locomotive – a **hybrid locomotive** that could reduce emissions by as much as 50 percent compared to most of the freight locomotives in use today.
- GE researchers are working to replace the most important invention of our founder, Thomas Edison—the light bulb. **Organic light-emitting diodes** or OLEDs could replace the conventional light bulb and use a fraction of the electricity.