GE Global Research

Technology. Innovation. Imagination. at work

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Caution Concerning Forward-Looking Statements:
This document contains "forward-looking statements" – that is, statements related to future, not past, events. In this context, forward-looking statements often address our expected future business and financial performance and financial condition, and often contain words such as "expect," "anticipate," "intend," "plan," "believe," "seek," "see," or "will." Forward-looking statements by their nature address matters that are, to different degrees, uncertain. For us, particular uncertainties that could cause our actual results to be materially different than those expressed in our forward-looking statements include: current economic and financial conditions, including volatility in interest and exchange rates, commodity and equity prices and the value of financial assets; potential market disruptions or other impacts arising in the United States or Europe from developments in the European sovereign debt situation; the impact of conditions in the financial and credit markets on the availability and cost of General Electric Capital Corporation's (GECC) funding and on our ability to reduce GECC's asset levels as planned; the impact of conditions in the housing market and unemployment rates on the level of commercial and consumer credit defaults; changes in Japanese consumer behavior that may affect our estimates of liability for excess interest refund claims (GE Money Japan); pending and future mortgage securitization claims and litigation in connection with WMC, which may affect our estimates of liability, including possible loss estimates; our ability to maintain our current credit rating and the impact on our funding costs and competitive position if we do not do so; the adequacy of our cash flow and earnings and other conditions which may affect our ability to pay our quarterly dividend at the planned level; GECC's ability to pay dividends to GE at the planned level; our ability to convert pre-order commitments into orders; the level of demand and financial performance of the major industries we serve, including, without limitation, air and rail transportation, energy generation, real estate and healthcare; the impact of regulation and regulatory, investigative and legal proceedings and legal compliance risks, including the impact of financial services regulation; our capital allocation plans, as such plans may change and affect planned share repurchases and strategic actions, including acquisitions, joint ventures and dispositions; our success in completing announced transactions and integrating acquired businesses; the impact of potential information technology or data security breaches; and numerous other matters of national, regional and global scale, including those of a political, economic, business and competitive nature. These uncertainties may cause our actual future results to be materially different than those expressed in our forward-looking statements. We do not undertake to update our forward-looking statements.
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"In this document, "GE" refers to the Industrial businesses of the Company including GECC on an equity basis. "GE (ex. GECC)" and/or "Industrial" refer to GE excluding Financial Services."
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September 18, 2013

GE Global Research

The technology development arm for GE

- First U.S. industrial lab
- Market-focused R&D
- One of the world's most diversified industrial research organizations
- Leading a team of 50,000 world-class engineers

Expanding our global presence

1900 - 1999 | 2000 - 2009 | 2010→

Advanced Manufacturing and Software Technology Center
Detroit, MI

Global Research Headquarters
Niskayuna, NY

Global Research Europe
Munich, Germany

2X Size + Customer Innovation Center

Russia

Japan

Israel

Software CoE
San Ramon, CA

O&G Tech Center
Oklahoma

Brazil Technology Center
Customer focused R&D
Rio de Janeiro, Brazil

Welch Technology Center
Bangalore, India

China Technology Center
Shanghai, China

+ 3 Customer Innovation Centers

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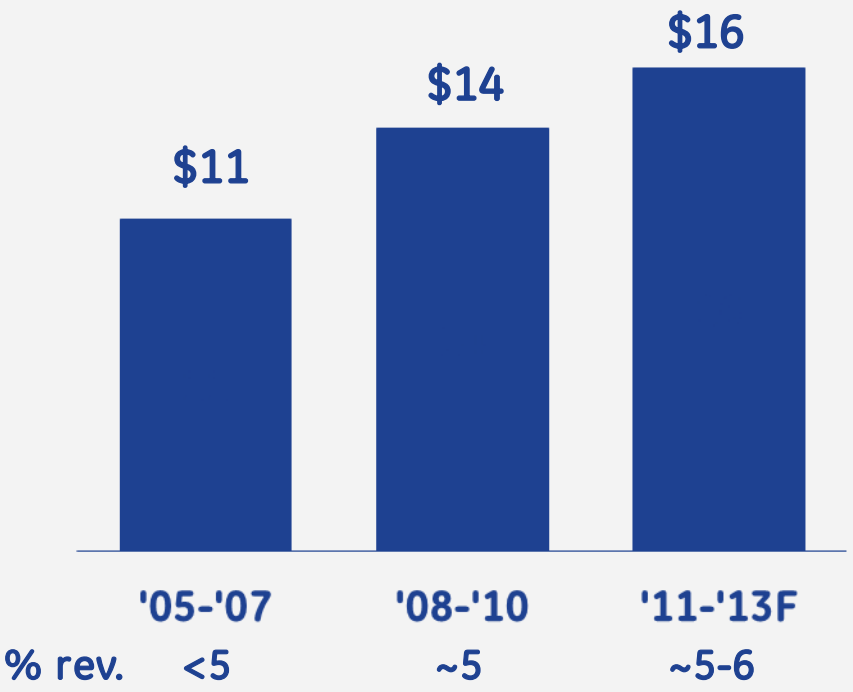
Leadership in technology

Investment ($B)



Areas of focus

Software and analytics
- Industrial Internet
- Services 2.0
- Controls

Advanced manufacturing
- Investing in technology

Leadership in natural gas
- Innovating for supply
- Creating demand

Acquisitions
Adding value

Forces shaping the Industrial Internet

GE is a company that builds the machines that make the world work and has access to and deep understanding of the information that can make them work better.

1. Internet

Hyper-connectivity: a living network of machines data and people

Internet of things: more devices tap into the Internet than people on Earth to use them

2. Intelligent Machines

Increasing system intelligence through embedded software

Rise of machines: networked devices overtook the global population in 2011

3. Big Data

Democratization of data

Data overload: 2.5 quintillion bytes of data created every day

4. Analytics

Generating data-driven insights

Enhancing asset performance by detecting & predicting forecasts

Algorithms on installed base

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Value of data

Monitor fleet of ~25,000 engines* … 3.6MM flight records/month

B777

GE90

17 sensors/engine

=

Data

- ✓ 90,000 flight records analyzed
- ✓ ~200 parameters per flight record
- ✓ ~18MM parameters per month

We know how our engines perform real time

Prognostics

- ✓ Dispatch reliability
- ✓ Preventive maintenance
- ✓ Asset utilization

Prevent failures = CSA margin

Asset productivity

- ✓ Enhanced service offerings
- ✓ Airline cost structure
- ✓ Fuel performance

↑ airline productivity

System optimization

- ✓ Time & space management
- ✓ Fuel efficiency
- ✓ Airspace capacity

Room to grow

- ✓ **Drives strong alignment with customers**
- ✓ **Creates productivity in long-term service agreements**
- ✓ **Additional revenue streams**

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*Includes GE, CFM and EA engines. CFM is a 50/50 JV with SNECMA and EA is a 50/50 JV with P&W.

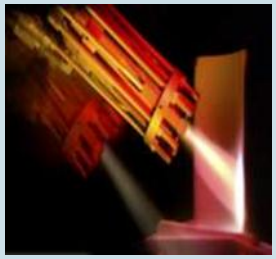
Infusing technology into manufacturing

Carbon Fiber Composites

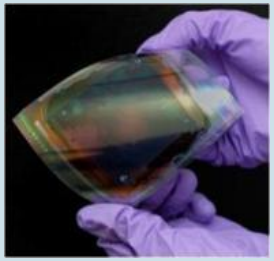
Novel Casting Technology

Hybrid Laser Welding

Microwave Brazing



Nano Spray Coatings



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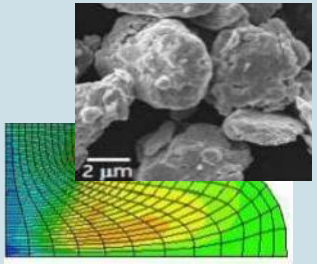
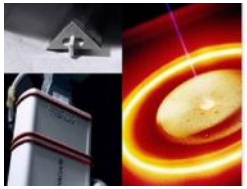


Magnetic Thermomechanical Processing

2x-7x decrease in material
30-50% increase in yield

Emerging Trends – Additive Manufacturing

Technology Toolkit:	Additive Design Tools	Machine Design	Process Control	Material Property Tailoring
Processing Options:	Laser	Electron-beam	Cold Spray	Lithography



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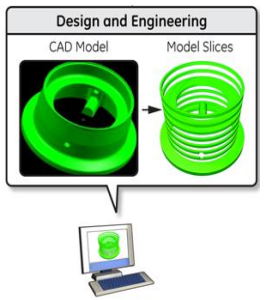
Additive Manufacturing/3-D printing

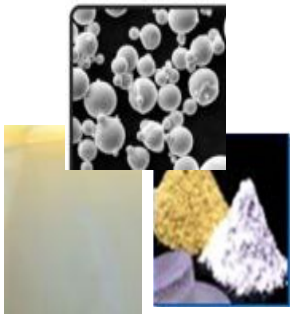
Conventional

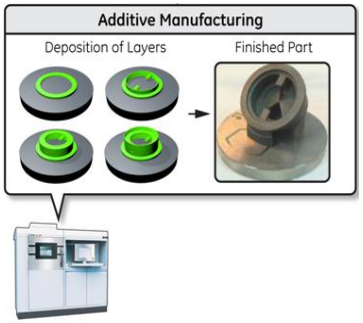
Start with a pre-formed billet, which gets formed and machined

- Material properties unchanged and cannot be location specific
- Limited to known set of geometries
- Design constrained by manufacturing
- Requires extensive tooling

Additive







Starts with a powder or wire and produces part layer upon layer upon layer

- Build material properties as you build the part … location specific
- More complex geometries possible
- Allows for faster iterations between design, materials and manufacturing
- Minimal tooling required

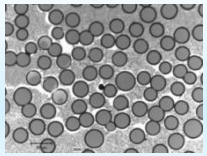
Ability to design new materials and implement them during the manufacturing process will create paradigm change

LEAP…not just any NPI

- First engine fired two days ahead of schedule
- Achieved max thrust
- 15,000 parts…3,000° F temps
- Composites, ceramics, super alloys
- 3D printed fuel nozzles
- Clearances ¼ thickness of a human hair

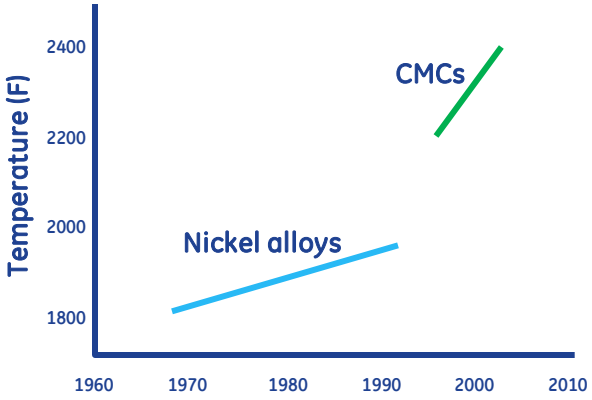
What are ceramic-matrix composites?

CMCs are silicon carbide fibers in a silicon carbide matrix

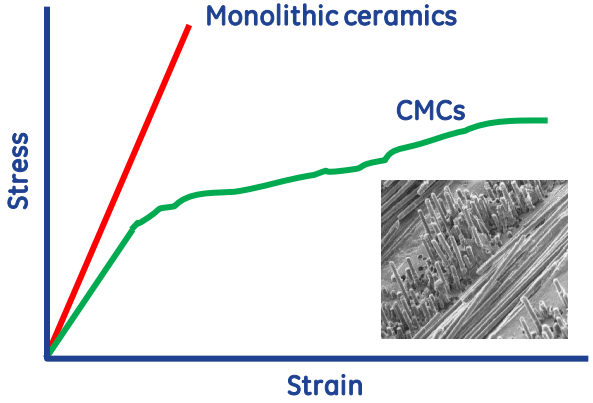


Diameter of a human hair

High-temperature



Not brittle

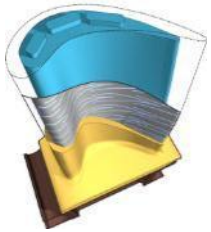


+500°F + 1/3 weight of metal = 1.5% Fuel efficiency

Leadership in natural gas

400 MW Gas Turbines …
60+% efficiency

Combustion **Cooling** **Materials** **HPC**



Distributed Generation
(1-10 MW) … 70+% efficiency

- Innovative Fuel Cell- Gas Engine Hybrid cycle
- Eliminate transmission losses
- Ultra low emissions

Gamechangers

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More natural gas use…

Dual Fuel Locomotive

Building on GE's new T4 diesel

- Common rail injection
- EGR
- Miller cycle

50% lower fuel cost

NG Airplanes

Technically feasible

- Soviet Union…Tupolev Tu-155
- MIT study…commercially attractive

Military early adopter

- Energy security / cost

30% lower fuel cost

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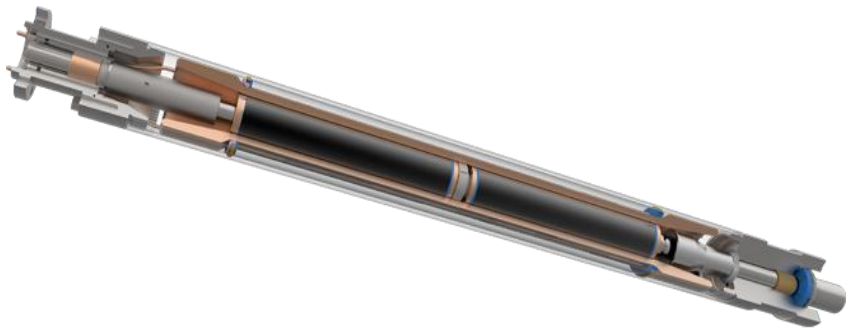
Acquisitions
Electric Submersible Pumps (ESPs)

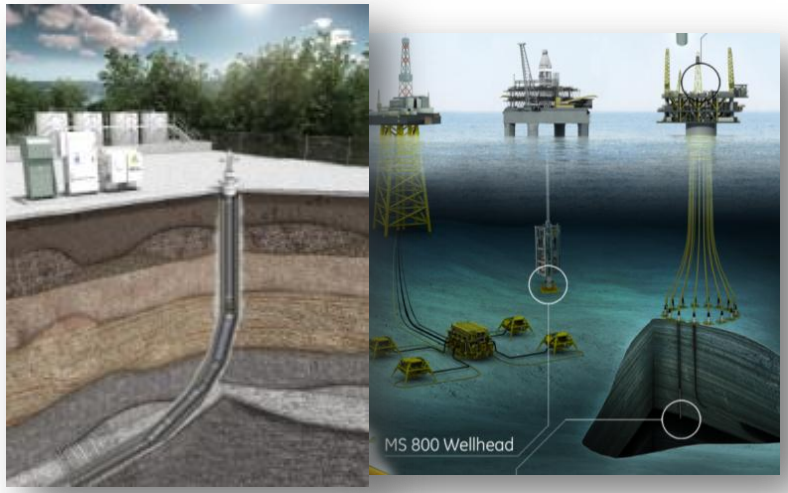
ESPs are used in >60% of global oil production today



New applications (e.g. unconventional oil & gas, subsea, geothermal, mining) demand operation in harsher environments

GE developing new technologies to address the need:

- High Temperature Motor Insulation
- Abrasion & Erosion Resistant Coatings
- Rotordynamics & Bearing Performance
- Monitoring & Diagnostics



GE technology delivering new capabilities to great acquired platform

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