Introduction to Dow

Connecting, Cultivating, Commercializing

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Outline

Introduction to Dow
Innovation at Dow
  Ventures and Business Development
  Research and Development
Megatrends
Opportunity Analysis
Sustainability
Recent Partnerships
New Products and Projects
Questions and Answers
Who We Are

- Founded in 1897 by Herbert H. Dow in Midland, Michigan
- A science and technology company with annual sales of US$60 billion
- Supplies a broad range of products and services to customers in 160 countries
- Production facilities in 36 countries with 52,000 employees worldwide
- Industry-leading portfolio of specialty chemical, advanced materials, agrosciences and plastics businesses
Global Reach

Approximately 52,000 employees are working in manufacturing plants, business centers, sales offices and research & development facilities located in more than 50 countries around the world.
### Dow’s Operating Segments

#### Advanced Materials
- **Electronic & Functional Materials**
  - Dow Electronic Materials
    - Semiconductor Tech
    - Interconnect Tech
    - Display Technologies
    - Growth Technologies
  - Functional Materials
    - Dow Wolff Cellulosics
    - Dow Home & Personal Care
    - Dow Microbial Control
    - Performance Additives
  - **JV:** Dow Corning

- **Coatings & Infrastructure Solutions**
  - Dow Building & Construction
    - Dow Building Solutions
    - Dow Construction
    - Dow Solar Solutions
  - Dow Coating Materials
    - Architectural Coatings
    - Industrial Coatings
  - Dow Water & Process Solutions
  - Performance Monomers
  - **JV:** Dow Corning

#### Agricultural Sciences
- Dow AgroSciences
  - Agricultural Chemicals
  - Seeds, Traits, & Oils
  - AgroFresh

#### Performance Materials
- Amines
- Automotive Systems
- Chlorinated Organics
- Dow Formulated Systems
- Dow Oil & Gas
- Dow Plastics Additives
- Epoxy
- Oxygenated Solvents
- Polyurethanes
- Polyglycols, Surfactants and Fluids
- Dow Haltermann
- SAFECEM
- **JV:** BASF Dow HPPO B.V.
- **JV:** Saudi Acrylic Monomers Company LLC (SAMCO)
- **JV:** SCG-Dow
- **JV:** AKSA-Dow

### Performance Plastics
- Polyethylene
- Plastics Licensing & Catalyst
- Dow Packaging & Converting
- Dow Elastomers
- Dow Electrical & Telecommunications
- **JV:** EQUATE
- **JV:** Equipolymers
- **JV:** The Kuwait Olefins Company K.S.C.
- **JV:** SCG-Dow
- **JV:** Univation Technologies

### Feedstocks & Energy
- Chlor-Alkali/Chlor-Vinyl
- Energy
- Ethylene Oxide/Ethylene Glycol
- **JV:** EQUATE
- **JV:** MEGlobal
- Hydrocarbons (Olefins, Aromatics, Aromatic Derivatives)
- **JV:** Compañía Mega
- **JV:** SCG-Dow
- **JV:** The Kuwait Olefins Company K.S.C.
Dow Business Segments

- Advanced Materials $11.8
- Agricultural Sciences $5.7
- Performance Materials $14.7
- Performance Plastics $16.3
- Feedstocks & Energy $11.9

Note: All figures represent 2011 pro forma sales, in billions of dollars
Feedstocks & Energy

**Low-Cost Power & Feedstocks • Significant Scale & Reach • Strategic Partnerships**

- World’s largest and most experienced ethylene, chlorine, caustic soda and purified ethylene oxide producer
- Leading consumer and producer of propylene
- Essential feedstocks for downstream specialties
- Cost-advantaged energy
- Global feedstock flexibility creates sustainable competitive advantage
- Value-added renewable energy solutions for specialties
- By-product recovery and re-use provides cost advantage
- Right-sized manufacturing footprint to match downstream demand
- Strong complement of strategic JV partnerships for growth

**Sales Growth Rate: GDP x 1**

**Normalized EBITDA Margin: 8 – 12%**
Accelerating Dow’s Innovation Agenda
Ventures & Business Development

- Identifies / analyzes *new technologies* and quantifies *new market opportunities* for Dow

- Serves as an *innovation pipeline* to supply Dow with a flow of new concepts for evaluation

- Seeks interaction with *emerging technology sources*, focusing on developing strategic relationships

- Staff includes *technical, commercial, and financial analysts*

- Uses *Technology Scouting group* to identify, interact with emerging technology-based opportunities
Research & Development

- Our growth has been built on a 100 year-history in R&D
- Dow is developing new technologies and methods, including breakthrough technologies for existing processes, concentrating on over 500 major projects
- Dow practices the fundamentals of R&D – deep expertise in analytical science, biotechnology, catalysis, ceramics, materials science, polymer science, separation science and high throughput research
- We employ more than 6,000 people dedicated to R&D with specialized skills and experience
- In 2008, one-third of Dow’s sales were from products introduced in the past five years
- With the acquisition of Rohm and Haas, Dow has one of the largest R&D investment programs in the industry with combined spending of more than $1.6B for 2009
Cultivating the innovation pipeline and managing a portfolio of technology and business opportunities that position Dow for growth.
## Research & Development

### What we do...

*Enable business growth through the use of fundamental & applied research*

<table>
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<tr>
<th>Product Research</th>
<th>Process Research</th>
<th>Application Development</th>
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<td>• Invent new molecules and materials</td>
<td>• Invent new processes and catalyst technologies</td>
<td>• Understand customers’ needs in current and emerging markets.</td>
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<td>• Process Scale up</td>
<td>• Develop new applications &amp; markets for Dow products.</td>
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<td>• Drive customer intimacy</td>
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Dow R&D Structure

80% is Business R&D

20% is Core/Unallocated R&D

• Long-term and cross-business projects
• Dow Corporate Venturing
• Capabilities
  – Analytical Sciences
  – Engineering & Process Science
  – Formulation Science
  – Organics, Polymers & Organometallics
  – Inorganic Materials and Heterogeneous Catalysis
  – Materials Science and Engineering
• Technologies
  – Materials Engineering Center
  – High Throughput Research
• External Research
• Information Research
Dow R&D Sites

Agro Sciences, Indianapolis, IN

Collegeville, PA (Greater Philadelphia)

Freeport, TX (Greater Houston)

Shanghai, China

B1470

North Wing

B1608

South Wing
## Megatrends: The Focus of Our Market-Driven Strategy

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Megatrends: The Focus of Our Market-Driven Strategy

**AGRICULTURAL SOLUTIONS**
- Population increases will drive demand for diverse diets
- Seeds & Traits sector expected to increase 7%
- Anticipate 4% growth in crop protection industry

**ENERGY SOLUTIONS**
- >$2 trillion clean-tech addressable market by 2020
- Solar and wind energy expected to grow double-digits
- Energy storage devices will also drive growth

**CONSUMER & LIFESTYLE SOLUTIONS**
- Double-digit growth rates for electronics over the medium-term
- Anticipate retail sales growth rate >2.5% in 2012
- Emerging economies will show strongest gains

**TRANSPORTATION & INFRASTRUCTURE SOLUTIONS**
- Double-digit growth for transportation in top 15 countries
- Investment in aging infrastructure networks
- Growing populations seek sustainable water solutions
Dow’s Four Pillars of Sustainability

**Smart Solutions For Today**
Our technologies enable our customers, and their customers, to develop products and services.

**Innovations For Tomorrow**
We contribute to the sustainability of society and our planet by developing innovative technologies for current and future markets.

**Responsible Operations**
Our infrastructure has a positive impact on our company, our communities and ourselves; our operations are a model for others, wherever we operate.

**Partners For Change**
We are leaders in advancing all aspects of sustainability, openly collaborating with customers, suppliers, communities, civil society and governments.
Recognitions for Sustainability

- Seven Presidential Green Chemistry Awards
  - more than any other company
- Named Eleven Times Dow Jones Sustainability Indexes
- China’s “Most Innovative Corporation” Award
  - for sustainable innovation of corporate ecosystem, CEO CIO Magazine and the Research Center for Technological Innovation
- 2010 Robert W. Campbell Award and 2012 Green Cross for Safety Medal
- #7 on Corporate Knights 2012 Clean Capitalism Ranking
- A+ rating on Annual GRI Report - Four Consecutive Years
New Chemistry Through Collaboration

Our Methodology

- We are constantly scouting the world for strategically enabling technologies and opportunities to drive Dow’s growth strategies.

- We serve as a collaborative catalyst for Dow businesses.

- We incubate promising business opportunities by creating the necessary conditions to cultivate business growth opportunities.

- We commercialize and then integrate growth options into existing or new operating businesses.
Collaboration With Powerful Results
DOW POWERHOUSE™ Roof Shingles

Description
Building integrated photovoltaic (BIPV) design combines roofing protection and power generation in one product.

Sustainability Profile
- Aesthetically pleasing and neighborhood-friendly, designed for asphalt rooftops
- Installed by a roofer along with standard asphalt roofing materials which eliminates additional steps and costs
- Interconnected system design allows for a single power connection
- Launched in October 2009, the POWERHOUSE™ Solar Shingle is commercially available today from selected professional roofing providers.
AIRSTONE™ Systems for Wind Energy

Description

- Applying technologies to make wind blades stronger, lighter and easier to produce, AIRSTONE™ Systems for Wind Energy is an innovative growth catalyst for alternative energy solutions.

Sustainability Profile

- AIRSTONE™ Systems enable wind blades to achieve the same strength with less weight than polyester-based composites
- Multiple product grades allow customers to tailor their final product based on specific market and environmental conditions
- Proprietary technologies help manufacturers improve cycle time and make longer blades – increasing energy production
Gluten Replacement

Description
Foods containing METHOCEL™ gluten replacement taste, feel and look great, allowing consumers to improve and satisfy their dietary needs.

Sustainability Profile
- Dietary needs satisfied without compromise
- METHOCEL™ gluten replacement binds water in bread, pasta and beyond, resulting in better taste and enduring moistness
- Farewell to flat and stodgy or dry and tasteless gluten-free food options
- Peace of mind: plant-based, not animal-based
- Allows food manufacturers to easily expand into this growing health category
Dow Water & Process Solutions

- Reverse Osmosis
- Ion Exchange
- Ultrafiltration
- Arsenic Removal
- Boron Removal

*Dow’s technology treats over 9 billions gallons of water every day*
Olefin Block Copolymers

- One-pot synthesis of designer olefin copolymers
- From *Science* article to commercialization in the same calendar year
- 2009 R&D100 Award Winner for Materials
Plastics to Energy

Description
Dow successfully demonstrated a pilot test measuring how plastic that has been reused and recycled to the full extent possible can be used as fuel for an ultimate end-of-life option, instead of going to a landfill for disposal.

Sustainability Profile
- 96 percent of available energy was recovered
- Energy recovered was equivalent to 11.1 million BTU’s of natural gas
- The recycle-to-energy recovery trial provided concept validation for submission and approval of one of several energy efficiency projects chosen to receive Dow’s energy intensity improvement funding
What We need?

Talented and highly motivated PhD level professionals

- Chemical Engineers
- Chemists
- Material Scientists
- Other disciplines

College of Chemistry Recruiter
Pete Nickias
PNNickias@dow.com

Materials Science Recruiter
George Jacob
Gjacob@dow.com
Thank You!