The forward-looking statements are based largely on information available as of the date hereof, and are subject to risks and uncertainties which may be beyond company control. Actual results could differ largely, due to numerous factors, including but not limited to the following: Group companies execute businesses in many different fields, such as information and electronics, performance products, polymers and processed products, pharmaceuticals, carbon and inorganic products, petrochemicals, and these business results are subjected to influences of world demands, exchange rates, price and procurement volume of crude oil and naphtha, trend of market price, speed in technology innovation, National Health Insurance price revision, product liabilities, lawsuits, laws and regulations.
List of Abbreviations

MCHC: Mitsubishi Chemical Holdings Corporation
MCC: Mitsubishi Chemical Corporation
MTPC: Mitsubishi Tanabe Pharma Corporation
MPI: Mitsubishi Plastics, Inc.
MRC: Mitsubishi Rayon Co., Ltd.
MEP: Mitsubishi Engineering-Plastics Corporation
JPP: Japan Polypropylene Corporation

GaN: Gallium nitride
CFRTP: Carbon fiber reinforced thermoplastics
PET: Polyethylene terephthalate
PTA: Purified terephthalic acid
EO:Ethylene oxide
EC: Ethylene carbonate
EG: Ethylene glycol
SM: Styrene monomer
PTMG: Polytetramethylene ether glycol
1,4-BG: 1,4-butylene glycol
PHL: Phenol
BPA: Bisphenol-A
PC: Polycarbonate
PO: Polyolefin
PP: Polypropylene
PE: Polyethylene
MMA: Methyl methacrylate
PMMA: Polymethylmethacrylate
VCM: Vinyl chloride monomer
PVC: Polyvinyl chloride
ABS: Acrylonitrile butadiene styrene
PS: Polystyrene
PBT: Polybutylene terephthalate
Today’s Agenda

Yoshimitsu Kobayashi
President & Chief Executive Officer
Mitsubishi Chemical Holdings Corporation

- Business Challenges

- Progress in the First Year of APTSIS 15 (FY2011 – FY2015)
  - Key Growth and Cash-generating Businesses
  - Growth and Next-generation Growth Businesses that We Are Intensively Cultivating
  - Synergies

- APTSIS 15 Goals

Hiroaki Ishizuka
Senior Managing Executive Officer
Mitsubishi Chemical Corporation

- APTSIS 15 Business Highlights

  - Business Strategies for the Chemicals and Polymers Segments
    - Converting from Conventional Plant Operation to Optimal Plant Operation -
Business Challenges

- **Business Environment**
  - Globalization
  - Sustainability
  - The Great East Japan Earthquake of March 11
  - Internally driven growth declining → Changing gear

- **Solutions**
  - Differentiation
  - Innovation
  - Measures to prevent economic hollowing-out
Globalization (G∞)

1. Difficulty of differentiation (by digitalization and IT)
2. Securing resources (key challenges: rare earths, crude oil, and the Great East Japan Earthquake on 11, March)
3. Speed (in an increasingly borderless world)
4. A decoupling and coupling world

Decoupling

- Asia, South America, Eastern Europe, Middle East
  - Capturing Asian growth markets with sales of commodities and other resources
  - Scale and global expansion
    - Inflationary risks
    - Country risks

Coupling

- Japan, Western Europe, North America
  - Heading toward high performance and high-added value and solutions
    - Sep.11, 2009
    - Sep.15, 2008
    - Mar.11, 2011
  - Volatile trends
  - Downgrade of U.S. debt
  - Sovereign risks

Two-pronged strategy: Specialties and Commodities

State Capitalism

Macro vs. micro economies

Free Market

Mitsubishi Chemical Holdings Corporation
The world is facing a major turning point

Sustainability

The Environment
- Notably global warming, water, desertification, and the biodiversity crisis

Economy
- Issues including resource depletion, food, financial, and economic crisis

Society
- Such as population of 7 billion, aging society, and problems of developing countries

Nuclear power accident transforms energy policies
- Rise in power costs
- Increase in fuel costs
- Renewable energy law
Internally Driven Growth Declining

<table>
<thead>
<tr>
<th>United States: Sluggish consumption and persistently high (8.6%) unemployment rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe: Fiscal deficits posing sovereign risks</td>
</tr>
<tr>
<td>China: Rising consumer prices, high housing prices, and tighter monetary policy</td>
</tr>
</tbody>
</table>

Fiscal and monetary policies have reached limits of effectiveness
Fiscal and monetary policy-led growth has come to a standstill

Relaxed monetary policy in China and cooperation between key central banks in Japan, the United States, and Europe

Prepared for the worst

Changing gear
Speedy optimization
Seven Key Barriers to Fair Competition in Global Market

- Tax systems
- Foreign exchange
- Regulations
- Trade policies
- Electricity costs
- Raw materials costs
- Greenhouse gas emission reductions
- Nuclear power issues

Reactive deal with the risk of hollowing-out
Necessity of an equal footing internationally (particularly in manufacturing)
Proactive Deal with the Risk of Hollowing-out

Differentiation & Innovation
Switch to international division of labor and low-energy-consumption model
Advance the industrial structure and create new industries

Provide employment
Notably in the service, agriculture, forestry and fisheries and healthcare sectors

Cultivating cosmopolitan employees and harnessing foreign nationals
Progress in the First Year of APTSIS 15

1. Key Growth and Cash-generating Businesses
2. Growth and Next-generation Growth Businesses that We Are Intensively Cultivating
3. Synergies
Topics: Growth and Cash-generating Businesses

- **Performance Products**
- **Health Care**
- **Industrial Materials**

### Next-generation Growth Business (6)
- Organic photovoltaic modules and materials
- Organic photo semiconductors
- Advanced performance products
- Agribusiness solutions
- Healthcare solutions
- Sustainable resources

### Growth Business (11)
- White LED lighting and materials
- Lithium-ion battery materials
- **FPD components**
- Performance composite materials
- High performance molding products
- Specialty chemicals
- Water treatment system and services
- **Pharmaceuticals**
- High performance graphite
- Performance polymers
- MMA/PMMA

### Business to be restructured (15)
- Naphtha crackers, etc.

### Cash-generating Business (18)
- Recording media
- Performance films
- Food ingredients
- Diagnostics & support for new pharmaceutical development
- **PTA**
- **Coke**
- PHL/BPA/PC
- PP

Net sales in FY2010

Today’s topics
### Conditions for Key Product Lines from First through Second Halves of FY2011

<table>
<thead>
<tr>
<th>MMA/PMMA</th>
<th>Pharmaceuticals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volumes</strong>&lt;br&gt;MMA performed basically as projected in the first half, but present market conditions have weakened owing to declining demand for optical applications. PMMA earnings will likely fall because of decreasing FPD demand.</td>
<td><strong>Earnings and profit increased in the first half. Second half earnings will likely be lower than in the first half because of higher operating costs to prepare for product launches and increased R&amp;D expenditure.</strong></td>
</tr>
<tr>
<td><strong>Prices</strong></td>
<td></td>
</tr>
<tr>
<td><strong>(Spread)</strong></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PTA</th>
<th>FPD components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volumes</strong>&lt;br&gt;Although volume has not dropped much, the spread has deteriorated and the market has recently declined faster than envisaged. Prospects do not look very positive for the second half, either.</td>
<td><strong>Volumes</strong>&lt;br&gt;LCD TV sales slowed significantly from 1Q of FY2011, with the downturn accelerating from 2Q. An early demand recovery seems unlikely.</td>
</tr>
<tr>
<td><strong>Prices</strong>&lt;br&gt;(Spread)</td>
<td><strong>Prices</strong>&lt;br&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carbon</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volumes</strong>&lt;br&gt;We assume that market conditions will weaken in the second half, and will focus on maintaining sales volume and prices with outstanding customers with which we have enjoyed long-term relationships.</td>
<td></td>
</tr>
<tr>
<td><strong>Prices</strong>&lt;br&gt;(Spread)</td>
<td></td>
</tr>
</tbody>
</table>
1-1: MMA / PMMA

Current situation

- **MMA monomer**:  
  - Demand for optical applications was sluggish in the first half, particularly in Asia, but profits were almost in line with projections, reflecting solid general and industrial demand in Europe and the U.S.
  - In the second half, persistently sluggish sales for optical applications have started affecting market conditions, leading to minor production adjustments.

- **PMMA**:  
  - Volumes and prices worsened in the first half because demand deteriorated for light guide plate for LCD TVs.

Future initiatives

- Create an integrated management structure for our global production bases in MMA monomer, and maximize earnings for production plans formulated to match demand trends.

- In PMMA, **shift the sales portfolio** from LED TV light guide plate applications to such general applications as LED lighting and automobiles. Continue to build global presence in large panels, a key Group strength.
1-2: PTA

Current situation

While APTSIS 15 factored in declining market conditions from its inception, the spread has deteriorated and the market has recently declined faster than envisaged. Prospects do not look very positive. That said, the volume impact is limited.

Future initiatives

- Swiftly stabilize production at the No.2 production facility in India
- Further reduce costs by leveraging new technologies that enhance energy and water efficiency
- Currently reinforcing structure so we can secure profits even if yearly average-spreads drop beneath the worst levels of the past 10 years ($150/t)
1-3: Carbon (Coke and High-Performance Graphite)

Current situation

- Volumes down slightly in line with decreased crude steel production
- Slow markets from 2Q of FY2011 because of an imbalance in demand and supply
- Export margins deteriorating

Future initiatives

- Export focus shifting from Europe and the U.S. toward India, Thailand, and other emerging nations
- Explore joint venture with overseas partner (POSCO Chemtech Co., Ltd. in Korea)
- Harness proprietary technologies and maintain and reinforce production
1-4: Pharmaceuticals

Current situation
- Exceeded projections in the first half, notably because of increased income from technology licensing fees for FTY720 (Gilenia, multiple sclerosis treatment)
- In the second half, we expect lower earnings because of significantly higher marketing spending on four new products (Lexapro, Simponi, Telavic, and Imusera) and higher R&D expenditure stemming from development progress

Future initiatives
- FY2011: Steadily cultivate Remicade and new products (Lexapro and Simponi)
- From FY2012: Boost earnings by offsetting declines from a revision in NHI drug prices through gains from new products and increased volume of key products

Outlook for FY2012 and beyond

Envisioned net sales

Remicade: Indication changed for treating Crohn’s disease; Venoglobulin: For generalized Myasthenia Gravis; Lexapro: Antidepressant; Simponi: For rheumatoid arthritis; Telavic: For chronic hepatitis C; Imusera: For multiple sclerosis
1-5: FPD Components*

* OPL film for polarizing film, PET film, Color resist, and Acrylic sheet for light guide panel etc.

**Current situation**

- In FY2011, revenues and earnings likely to suffer from downturn in global LCD television market, chronic inventory adjustments in LCD components, and yen’s appreciation.

- From 2012, likely to feel effects of slower expansion in large panel production and further price declines.

- Some products have only slight price decreases because of their market share and the nature of the products.

**Future initiatives**

- We are reviewing overall projections for FPD components growth rates, but we anticipate ongoing expansion, as we are specializing in the smiling curve area on the left.

- That said, we will continue to push ahead with materials in which we have superior quality, including by accelerating overseas expansion. At the same time, we will radically overhaul our business in materials for which it is hard to differentiate quality, including by freezing investments and developing other applications.
Prospects for Electronics Businesses

Accelerate the shift to solutions businesses in the sustainability and health fields

Build presences in expanding markets

- **Sustainability**
  - Environment and new energy
- **Health**
  - Health and healthcare
- **Comfort**
  - New materials

Develop solutions businesses

Develop convenient and entertaining products

Fully harness technological capabilities and marketing and sales platform

Electronics businesses
Progress in the First Year of APTSIS 15

1. Key Growth and Cash-generating Businesses

2. Growth and Next-generation Growth Businesses that We Are Intensively Cultivating
   2-1 Carbon Fibers and Composite Materials (Performance composite materials)
   2-2 High performance graphite
   2-3 White LED lighting and materials
   2-4 Lithium-ion battery materials
   2-5 Health Care Solutions

3. Synergies
Growth and Next-generation Growth Businesses that We Are Intensively Developing

Sustainable growth drivers

Challenge the growing markets

**Sustainability**
- Environment and new energy

**Health**
- Health and healthcare

**Comfort**
- New materials

Progress in growth businesses

- White LED lighting and materials
- OPV modules and materials
- Organic Photo semi-conductors
- Sustainable resources
- Advanced performance products
- Healthcare solutions
- Agribusiness solutions
- Lithium-ion battery materials for HEVs
- Performance composite materials**

**APTSIS 10** Next-generation Growth Businesses

Timeline

- 2010
- 2015
- 2020

**APTSIS 15** Next-generation Growth Businesses

Mitsubishi Chemical Holdings Corporation

Today's topics

**chemical components for vehicles**
New Carbon Technology
- Integration of Organic, Inorganic and Polymer Chemistry -

Drawing on more than seven decades in the carbon business to contribute to KAITEKI with development of new carbon materials

Coal
- Coke oven
- Coke oven gas
- Carbon black
- High performance graphite
- Needle coke
- Pitch-based carbon fibers
- Pan-based carbon fibers
- C60(Fullerene)

Crude oil
- Acrylonitrile
- PAN fibers
- PAN-based carbon fibers
- C60(Fullerene)

Applications
- Iron and steel
- Electricity generation
- Tires and inks
- Electrodes, nuclear power, semiconductors
- Robot arm, construction, windmill, automobile
- Windmill, automobile, Sports and leisure, aircraft
- Organic photovoltaic (OPV)
2-1: Carbon Fibers and Composite Materials

Expand in promising industrial applications

- Focus on and accelerate in high-performance large tow size (LT) carbon fiber for the environmental and energy fields and for the automotive and other industries  (PAN industry applications: from 40% in FY2010 to 80% in FY2015)
- Leverage Group synergies in cultivating thermoplastic composites (CFRTP)
- Maintain leading position in sports and leisure fields
- Collaborate with Cytec Industries Inc. (the U.S.) in aerospace development

Demand forecasts by application

Industrial applications to roughly 2.5 times those of 2010 by 2015, with demand rising 25,000 tons
Developing Wind Power Applications

Turbine blades are becoming larger in the drive to attain even higher efficiency for wind power. Carbon fiber can help increase blade sizes, and MCHC can optimally supply PAN- and pitch-based CFs.

- **Wind power capacity is fast expanding worldwide**
  - 197,000 megawatts in 2010 (1.5% of global electricity demand)
  - 1.5 million megawatts by 2020 (12% of global electricity demand)
  

- **Higher performance from carbon fiber-reinforced plastics will lead to larger turbines**
  - Increasing generating efficiency → Output proportional to the square of the diameter → Larger scale
  - Few wind farm locations (particularly in Europe) → Operators constructing turbines offshore → Larger scale

- **We aim to increase shipments for turbine blades by 10,000t by 2015**

- Carbon fiber demand projections for wind power application (Calendar year)
  - 6,000t in 2011
  - 10,000t in 2013
  - 16,500t in 2015

We have already begun steady production and sales of high-performance LT carbon fiber:

- PAN-based CFs 10,100t/y (current) → 13,800t/y (FY2015)
  - Maintaining steady shipments for wind turbine applications from a line with an annual capacity of 2,700 metric tons that began production at the Otake Plant in June 2011

- Pitch-based CFs 1,000t/y (current) → 1,450t/y (FY2015)
  - Looking to expand industrial applications, including for use with PAN-based carbon fibers
For mass-produced vehicles, using PCM* technology to dramatically shorten process lead times, applying this approach for some vehicles

*Prepreg Compression Molding: Original technology with quick cure prepreg and preform technology

Thermoplastic compound resins used in carbon fiber applications will soon become essential for mass produced vehicles. We are combining carbon chemistry and polymer technologies in deploying the Group’s comprehensive capabilities, including in processing technologies.

We are steadily selling carbon fiber precursors for high-performance LT carbon fiber for BMW’s Megacity Vehicle

Employing MRC’s carbon fiber as a precursor raw material in the first mass-produced passenger vehicle whose main structural material is carbon fiber (Scheduled to be launched in 2013)

(BMW i8 (plug-in hybrid car) BMW i3 (electric vehicle)

(Photos: Tokyo Motor Show 2011 (December 3 to 11, 2011) )
2-1: Carbon Fibers and Composite Materials

Generating Synergies

- **Research and development into increasingly large-scale wind power applications**
  - Start R&D to optimize performance for polyacrylonitrile (PAN) and pitch-based carbon fibers (MRC and MPI)

- **Research and development for Automotive usage**
  - Develop thermoplastic materials (CFRTP) (MRC/MCC)
    - Develop materials
    - Cultivate molding techniques
    - Launch mass production
  - Develop automotive materials (MRC and MPI)
    - Start development (such as with wheels)
    - Launch mass production
  - Cultivate European market through cooperation with Quadrant
    - Set up business site (in Germany)
    - Start marketing with PCM technology
    - Begin full-fledged usage

- **Aerospace usage**
  - Collaborate with Cytec in aerospace development
  - Undertake activities to secure quality certifications from domestic and foreign aircraft manufacturers

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2-2: High-Performance Graphite

Planned to set up a production and sales joint venture for needle coke in Korea to reinforce our business

**Mitsubishi Corp.**

**POSCO Chemtech**

**MCC**

**Sakaide Plant**

**New JV**

Coal Tar 320,000 t/y (Annual production capacity)

Needle coke 60,000 t/y

Pitch coke 40,000 t/y

Tar sales
Several tens of thousands of tons

Secure Coal Tar sources (After 2014)

External sales

Technology

Engineering fees

Japan 40%
Korea 60%

40% from Japan (MCC and Mitsubishi Corp.)
60% from POSCO Chemtech

Overview of planned joint venture
Scheduled establishment date: Mid-2012
Paid-in-capital: KRB 200B (JPY14B)
Investment ratios:

Gwangyang steelworks
Coal Tar 320,000 t/y

Pohang steelworks
Coal Tar 250,000 t/y

Gwangyang

Pohang

Planned joint venture site
Within POSCO’s Gwangyang steelworks

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2-3: White LED Lighting and Materials

Materials and lighting businesses in line with objectives

Mass production of gallium nitride substrates by liquid phase method

- Nov. 2011 Started distributing samples
- 2012 Will complete mass production pilot facilities (Mizushima)
- 2013 Plan to start full-fledged mass production (Mizushima)
  (Aim to establish G-CHEM* low-pressure production technology in 2012)

Phosphor business focusing on the lighting market

- Maintain high market share in red phosphors
- Launched sales of new yellow nitride phosphors and upgrading facilities to increase production
- New LED lighting techniques: Starting to handle remote phosphors

Lighting business with Verbatim’s global sales channels

- Already launched LED light bulbs in Japan, United States, and Europe
- High-color-rendering lighting fixtures for high end of markets (launch VxRGB fixtures in Dec. 2011)

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Gallium Substrate Business Efforts

Leveraging SCAAT* (liquid phase) method in drive to attain revolutionary quality, mass production, and low costs

Innovation & Differentiation - SCAAT* method

Materializing high-performance m-plane substrates
- Creating a market for green laser diodes
- Creating a market for high-performance, high-color-rendering LED lighting

Materializing large substrates
- Expanded applications for electronic devices

Road map for gallium nitride substrates

2012 Inaugural year for lighting applications
Jan. Commercialize high-quality c-plane substrates
Oct. Commercialize high-quality two-inch m-plane substrates
  Monthly output of 500 units
  Main applications:
  - Green laser diodes (for projectors and laser displays)
  - Blue and Violet LEDs

2013 Fully enter the LED lighting market
Apr.-Oct. Start mass production furnace operations
  Commercialize high-quality four-inch substrates
  and launch full-fledged production
  6,000 units monthly (two-inch substrate equivalents)
  Main applications: Blue and Violet LEDs, Electronic devices

2015 Planning to fully enter electronic devices market
Oct. Commercialize high-quality 6-inch substrates
  30,000 units monthly (two-inch substrate equivalents)
  Main applications: Electronic devices

Mitsubishi Chemical Holdings Corporation
Phosphor and Lighting Businesses

Build a presence in high-output, high-color-rendering lighting centered on Group lighting materials

- A full phosphor lineup targeting the lighting market
- Cultivate KAI TEK lighting business globally through the Verbatim marketing channel

Maintain a high share of the red phosphor market
Boost green and new yellow phosphors lineup
Stake future on remote phosphor capabilities
Reinforce intellectual property strategy

Conventional setups
Remote system
Phosphor parts separated from LED light sources

RGB phosphors
RG phosphors
RY phosphors
Remote phosphors

Luxury stores
Luxury housing
Medical lighting
Museums
Middle class stores and housing
Outdoor scenes (lighting effect)
Car headlamps
Regular stores and commercial facilities
Houses and outdoors

RGB phosphors
RG phosphors
RY phosphors
Remote phosphors

High color rendering lighting
Launch in December 2011
Halogen bulb alternatives (a world first)
Launch in spring 2012

Conventional blue excitation LED lightings
Sales target for end-fiscal 2011
50,000 units monthly・WW
2-4: Lithium-ion Battery Materials

Steadily expand globally for all four key materials in line with market expansion

Progress after the last investors meeting on Jun. 14, 2011

Production capacities and Schedules of increase

Electrolytes 10,000t/y (FY2011 4Q)
Stockton-on-Tees, UK
(On the premise of Cassel plant of Lucite International)

Electrolytes 10,000t/y (FY2012 3Q)
Changshu, Jiangsu Province, China
Within Changshu Economic and Technological Development Zone

Electrolytes 10,000t/y (FY2012 1Q)
Memphis, Tennessee, US
(On the premise of Memphis plant of Lucite International)

Anode materials 4,000t/y (FY2011 4Q)
Spherical graphite (JV)
Pingdu, Shandong Province, China

Anode materials 8,000t/y (FY2012 3Q)
Spherical graphite (JV)

Japan

Electrolytes 8,500t/y (in operation)
Anode materials 7,000t/y (FY2011 2Q)
Cathode materials 2,200t/y
Separator 12,000K m²

Electrolytes 13,500t/y (FY2011 4Q)
Anode materials 7,000t/y (in operation)
Cathode materials 2,200t/Y (in operation)
Separator 27,000K m² (FY2012 Q2)

Production capacities and Schedules of increase

Electrolytes 8,500t/y (in operation)
Anode materials 7,000t/y (FY2011 2Q)
Cathode materials 2,200t/y
Separator 12,000K m²

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Anode materials 8,000t/y (FY2012 3Q)
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Electrolytes 10,000t/y (FY2012 3Q)
Changshu, Jiangsu Province, China
Within Changshu Economic and Technological Development Zone

Electrolytes 10,000t/y (in operation)
Anode materials 7,000t/y (FY2011 2Q)
Cathode materials 2,200t/y
Separator 12,000K m²

Electrolytes 13,500t/y (FY2011 4Q)
Anode materials 7,000t/y (in operation)
Cathode materials 2,200t/Y (in operation)
Separator 27,000K m² (FY2012 Q2)

Total capacity as of FY2011 2Q
Total capacity after factoring in targets
Total targeted capacity by FY2015 4Q

Electrolytes 8,500t/y 43,500t/y 50,000t/y
Anode materials 7,000t/y 15,000t/y 35,000t/y
Cathode materials 2,200t/y 2,200t/y 15,000t/y
Separator 12,000K m² 27,000K m² 72,000K m²

Steadily expand globally for all four key materials in line with market expansion

Electrolytes 10,000t/y (FY2012 3Q)
Changshu, Jiangsu Province, China
Within Changshu Economic and Technological Development Zone

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Spherical graphite (JV)
Pingdu, Shandong Province, China

Anode materials 8,000t/y (FY2012 3Q)
Spherical graphite (JV)
MCHC Group’s Strengths

Collaborating in four materials categories to help create safer, more reliable batteries

Lithium-ion batteries are small chemical plants
(Consolidating chemical materials to drive physical and chemical reactions)

- Anode materials
  - Carbon materials chemistry
  - Control materials based on graphite
- Cathode materials
  - Inorganic and catalytic chemistry
- Separators
  - Resin processing
  - Microstructure design
- Electrolytes
  - Organic chemistry
  - Molecular design

High-safety design
We have testing capabilities and safety testing facilities for battery cells that we are harnessing in materials development

Mitsubishi Chemical Holdings Corporation
Developing into KAITEKI Societies (Smart Communities)

Also targeting stationary batteries with renewable energy storage systems

Wind power  Solar power  Geothermal power

Achieved 11% conversion efficiency in organic thin-film solar cells, a world best

Next target
Stationary storage batteries  PV/OPV

Exploring smart community collaborations with housing makers and general contractors

Cultivating our systems business through a Holy Grail combination of power generation (PV/OPV), storage batteries (LiBs), and power savings (LEDs/organic OLEDs)

Mitsubishi Chemical Holdings Corporation
Meet emerging healthcare needs by delivering solutions for disease treatment and prevention, through synergies of the Group core technologies.

Examples of technology platforms:

- Drug development expertise
- Biomarker development technologies
- Diagnostic technologies
- Metabolome analysis
- Metabolic engineering (Yeast, bacteria & algae)
- Hollow fiber membrane separation technology
- Information electronics technologies (Batteries and LEDs)
- Computer science (including 1/f fluctuation analysis)
- Device development technologies
- Simulation technologies
Developing general medical device by applying computational analysis technologies accumulated in chemical plant control

Core technologies
Applying 1/f fluctuation and other computational analysis technologies for nonlinear phenomena in the chemical industry

Example of applications
- Plant control technologies
- Liquid chromatographic analysis
- Carbon fiber brake disc applications

Healthcare solution
Body signal detection (daily gait analysis)

Example of applications *
- Parkinson’s disease
- Tracking rehabilitation progress (rehabilitation after stroke treatment)

* Adviser: Professor Hiroshi Mitoma, Tokyo Medical University

MIMAMORI-gait
May 2011: Approved by PMDA (Pharmaceutical and Medical devices Agency), Japan

General medical equipment: Motion recorder for gait analysis

e.g. Quantitative measurements of treatment effects of medications. Expectation for early disease detection.
Progress in the First Year of APTSIS 15

1. Key Growth and Cash-generating Businesses
2. Growth and Next-generation Growth Businesses that We Are Intensively Cultivating
3. Synergies
   3-1 Costs and R&D
   3-2 Headquarters Relocation
### 3-1: Framework of Cost and R&D Synergies

**Start various projects to realize synergies**

<table>
<thead>
<tr>
<th>Area under study</th>
<th>Remarks</th>
<th>FY2011</th>
<th>FY2013</th>
<th>FY2015</th>
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</thead>
<tbody>
<tr>
<td><strong>Purchasing</strong> (23)</td>
<td>Set up office to prepare an equipment (&amp; materials) procurement center <strong>Starting 9 months earlier</strong></td>
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<tr>
<td><strong>Logistics</strong> (5)</td>
<td>Start logistics efficiency project</td>
<td><strong>Review logistics centers and others</strong></td>
<td><strong>Transition</strong></td>
<td><strong>Transition</strong></td>
</tr>
<tr>
<td><strong>IT units</strong> (3)</td>
<td>Integrate group IT companies <strong>Looking to save ¥400 million from integration</strong></td>
<td><strong>Integrated in Oct.</strong></td>
<td><strong>Shift to optimal operations</strong></td>
<td></td>
</tr>
<tr>
<td><strong>R&amp;D units</strong> (0.5)</td>
<td>Integrate MCC &amp; MRC biotech research labs <strong>MCC/MPI/MRC: In July, launched joint development structure and project for carbon fiber-reinforced thermoplastics</strong> <strong>MCC/MRC: Leverage dehydrogenative oxidation catalyst technology synergies of both companies to shorten lead time for butane to crude butadiene process</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intellectual Property Department</strong></td>
<td>Concluded basic memorandum of understanding for Group intellectual property collaboration rules and research and business development • Foster the mutual usage of patents and joint development among operating companies and accelerate business development, deploying a patent strategy to integrate specific technologies Examples: Carbon fiber-reinforced thermoplastics and bioplastics manufacturing and applications development</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3-2: MCHC Headquarters Relocation

Move aims to help materialize Group synergies more swiftly and streamline organizational management

New address: 1-1, Marunouchi 1-chome, Tokyo
Relocation timing: From May through August 2012

Basic concept of APTSIS 15:
Grow, Innovate, and Leap Ahead
by orchestrating the Group's strengths

- **Streamlining efficiency**
  - Harness human resources more efficiently by consolidating headquarters of Group companies (except MTPC) in one location
  - Integrate business infrastructure and streamline office service management to cut costs

- **Close communication with top management**
  - Proximity of offices for directors of MCHC and Group companies

- **Efficient management of shared facilities and more efficient office operations**
  - Locating common departments on the same floors and installing an IT infrastructure that matches future needs

- **Creating an environment in which we can swiftly materialize business synergies and foster Group unity**
APTSIS 15 Goals

“Grow, Innovate and Leap Ahead by orchestrating the Group strengths”
**APTSIS 15 Strategies**

“Grow, innovate, and leap ahead by orchestrating the Group strengths”

<table>
<thead>
<tr>
<th>Strengthening fundamentals</th>
<th>Generate synergies, improve financial position, and reform business structure by orchestration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growth Strategy</strong></td>
<td>• Accelerate transformation to deliver high-performance products and high-value-added businesses</td>
</tr>
<tr>
<td></td>
<td>• Expand green businesses</td>
</tr>
<tr>
<td></td>
<td>• Develop new medicines to fulfill unmet medical needs</td>
</tr>
<tr>
<td></td>
<td>• Operate globally</td>
</tr>
<tr>
<td></td>
<td>Deliver KAITEKI solutions by pursuing Sustainability, Health, and Comfort</td>
</tr>
<tr>
<td><strong>Innovation Strategy</strong></td>
<td>Build new businesses for the future</td>
</tr>
<tr>
<td><strong>Leaping Ahead (M&amp;A)</strong></td>
<td>Invest strategically in alliances and M&amp;A</td>
</tr>
</tbody>
</table>

Mitsubishi Chemical Holdings Corporation
### Economic Indexes

<table>
<thead>
<tr>
<th>Index</th>
<th>FY2012</th>
<th>FY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating income</td>
<td>¥230.0 billion</td>
<td>¥400.0 billion</td>
</tr>
<tr>
<td></td>
<td>Growth &amp; Innovation Strategies</td>
<td>¥330.0 billion</td>
</tr>
<tr>
<td></td>
<td>Leaping ahead (M&amp;A)</td>
<td>¥70.0 billion</td>
</tr>
<tr>
<td>ROA (income before income taxes/total assets)</td>
<td>≥ 8%</td>
<td></td>
</tr>
<tr>
<td>Net debt-to-equity ratio</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Overseas sales ratio</td>
<td></td>
<td>≥ 45%</td>
</tr>
</tbody>
</table>

### Sustainability Index
- Environmental impact
  - reduce by 30% (Japan) vs. FY2005 (17% reduction of GHG)

### Health Index
- Index derived by the degree of difficulty to treat diseases & the number of administered patients
  - increase by 30% vs. FY2009

### Comfort Index
- New products ratio in the Performance Product & Health Care domains
  - ≥35%
“Four Dimensional Management” and MOS
Proposal of “Management of SUSTAINABILITY” (MOS Axis)

\[ K = \left\{ (F^2 + T^2 + S^2)W_f [1 - \exp(-F^2)] \right\}^{1/2} \]

\[ W_t [1 - \exp(-T^2)] W_s [1 - \exp(-S^2)] \]

K: KAITEKI Value
W_f, W_t, W_s: weights of F, T, S respectively
F: Financial performance
T: Technology
S: MOS

If any one of F, T, and S is zero, K is zero, too.

Timeline:
MOT (Management of Technology)
GHG
Business Administration
Stakeholder Capitalism
Shareholder Capitalism
Crisis of Financial Capitalism (2008)
Public Interest Environment (CSR), (RC)

Proposal of "Management of SUSTAINABILITY" (MOS Axis)
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments (excluding carbon, MMA/PMMA)

1. Business Climate Assessment
2. Basic Strategies
3. Business to be Restructured
4. Growth and Cash-generating Businesses
5. Next-generation Growth Business
6. New Technologies
7. Progress in Our Business Strategies under APTSIS 15
1. Business Climate Assessment

Business Climate Assessment

Assessment in 2010

2011

- Production of PO and other derivatives to decline
- Excess supplies from other markets
- Production within Middle East and China markets
- Shrinking export demand
- Greater penetration of Japanese market

Around 2015

- Reduced cracker operations
- Domestic ethylene production to decline to 5 million metric tons in 2015
- Further decreases feared

Great East Japan Earthquake, Thai floods, U.S. giant hurricane, a rising yen, monetary tightening in China, sovereign risks in Europe, and downgrade of U.S. debt

Near-term assessment

Assessment: As per last year
Conditions: Deteriorating more swiftly than expected
Initiatives: Implementing earlier than planned
Domestic Ethylene Production Trends

Fall of operation rates since September 2011 with a decrease in exports and an increase in imports in derivatives

The lowest production in the last 15 years
(Below 2007 production at the time of the US subprime mortgage crisis)

2007 7,740kt/y (Record production)
2010 7,020kt/y
2011 Approx. 6,700kt/y

Source: Japan Petrochemical Industry Association
Mitsubishi Chemical Holdings Corporation

*Nov. – Dec. 2011: estimates by MCHC
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments (excluding carbon, MMA/PMMA)

1. Business Climate Assessment

2. Basic Strategies
   - Business to be Restructured
   - Growth and Cash-generating Businesses
   - Next-generation Growth Businesses

3. Business to be Restructured

4. Growth and Cash-generating Businesses

5. Next-generation Growth Business

6. New Technologies

7. Progress in Our Business Strategies under APTSIS 15
Increase profitability by accelerating globalization, shifting to high-performance products, and optimizing product chain.

- **Growth Strategy**
  - Expand global operations and shift to high-performance products with regional partners
    - MMA/PMMA, Performance polymers, High-performance graphite

- **Innovation Strategy**
  - Deliver new materials that contribute to the environment and to sustainable carbon society
    - Sustainable resources

- **Cash-generating Business**
  - Stabilize earnings and reinforce business structure
    - Stabilize operations and minimize environmental impact
    - Reinforce business structure by expanding technology licensing, improving process technologies, and leveraging high-value-added products
      - PTA, Coke, PP, PHL/BPA/PC, etc.

- **Business to be restructured**
  - Complete restructuring
2. Basic Strategies

Portfolio Management

Today’s Topics

- Performance Products
- Health Care
- Industrial Materials

Next-generation Growth Business (6)
- Organic photovoltaic modules and materials
- Organic photo semiconductors
- Advanced performance products
- Agribusiness solutions
- Healthcare solutions
- Sustainable resources

Growth Business (11)
- White LED lighting and materials
- Lithium-ion battery materials
- FPD components
- Performance composite materials
- High performance molding products
- Specialty chemicals
- Water treatment system and services
- Pharmaceuticals
- High performance graphite
- Performance polymers
- MMA/PMMA

Business to be Restructured (15)
- Naphtha crackers, etc.

Cash-generating Business (18)
- Recording media
- Performance films
- Food ingredients
- Diagnostics & support for new pharmaceutical development
- PTA
- Coke
- PHL/BPA/PC
- PP
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments (excluding carbon, MMA/PMMA)

1. Business Climate Assessment
2. Basic Strategies
3. Business to be Restructured
   3-1. Restructuring Plants
      - Mizushima Plant
      - Kashima Plant
      - Other Plants
   3-2. Business to be Restructured
4. Growth and Cash-generating Businesses
5. Next-generation Growth Business
6. New Technologies
7. Progress in Our Business Strategies under APTSIS 15
1. Nishi Nippon Ethylene began operations in April 2011
   → Preparing an ethylene demand decline
2. Cracker downsizing in June 2011
   → Completed measures to counter higher costs during lower operations
3. Forming aromatics alliances in April 2012

Increased flexibility from operational integration with Asahi Kasei Corporation and downsizing
1. Structural Reforms

Ethylene: Reinforce EO business
- Complete EO center and boost EC production → Stabilize demand
- Reinforce PE business → High performance

Propylene: Reinforce PP business
- Shut down obsolescent slurry facility and shift production to state-of-the-art production facility → Become more cost competitive

Aromatics: Shut down a part of benzene production facility → Reduce benzene business risk

2. Under discussions about restructuring of VCM/PVC sector

3. Studying optimal operation of Kashima-Kita Kyodo Power Station

4. Exploring petrochemicals refinery partnership opportunities
3-1. Restructuring Plants

Other Plants

Strengthening our organization largely by rebuilding utilities

Kurosaki Plant
Cut costs by optimizing utilities (Implemented from May 2011)

Yokkaichi Plant
Form utilities alliance with Showa Yokkaichi Sekiyu Co., Ltd. (To be completed in July 2013)

Kashima Plant (Kashima-Kita Electric Power)
Supply power through full operation of in-house generating facilities
Total of around 200,000 kWh (enough to supply about 500,000 homes)

Naoetsu Plant

Yokkaichi Plant
3-2. Business to be Restructured

Progress from APTSIS 10 through First Year of APTSIS 15

Sales reduction of about ¥150 billion, cutting losses by around ¥13 billion

<table>
<thead>
<tr>
<th>Chain</th>
<th>Restructuring details</th>
<th>FY 2008</th>
<th>FY 2009</th>
<th>FY 2010</th>
<th>FY 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM chain</td>
<td>Liquidated SM business (Yuka Seraya)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Sold stake in ABS business (Techno Polymer)</td>
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<tr>
<td></td>
<td>Sold stake in PS business (PS Japan)</td>
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<tr>
<td></td>
<td>Shut down a SM production facility at the Kashima Plant</td>
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</tr>
<tr>
<td>PVC chain</td>
<td>Shut down a PVC production facility at the Mizushima Plant</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Shut down a PVC production facility at the Yokkaichi Plant and electrolyte and VCM production facilities at the Mizushima Plant</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nylon chain</td>
<td>Shut down a cyclohexane production facility at the Mizushima Plant</td>
<td></td>
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<tr>
<td></td>
<td>Shut down caprolactam, anone, and ammonium sulfate production facilities at the Kurosaki Plant</td>
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</tr>
<tr>
<td></td>
<td>Sold nylon business to Royal DSM N.V.</td>
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<td></td>
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</tr>
<tr>
<td>Surfactants</td>
<td>Terminated ethoxylates business</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Shut down aliphatic alcohol and hydrophobic apoprotein production facilities at the Mizushima Plant</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Withdrew from glycol ester business</td>
<td></td>
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</tr>
<tr>
<td>PTA</td>
<td>Shut down a paraxylene production facility at the Mizushima Plant</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Shut down a PTA production facility at the Matsuyama Plant</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PP</td>
<td>Shut down two PP production facilities at the Kawasaki Plant of Japan</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Shut down a PP production facility at the Kashima Plant of JPP</td>
<td></td>
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<tr>
<td></td>
<td>Shut down a PP production facility at the Goi Plant of JPP</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments (excluding carbon, MMA/PMMA)

1. Business Climate Assessment
2. Basic Strategies
3. Business to be Restructured
4. Growth and Cash-generating Businesses
   - Accelerating Globalization and Drive toward High Performance
   - Solidifying Fundamentals through Technology Licensing and High-performance Products
5. Next-generation Growth Business
6. New Technologies
7. Progress in Our Business Strategies under APTSIS 15
### Growth and Cash-generating Businesses

#### Performance Polymers
- Accelerate globalization (encompassing China, North America, and Asia) of existing products
- Transfer PVC compound business owned by The Sunprene to Mitsubishi Chemical Performance Polymers in the U.S. (Dec. 2011)
- Rationalize domestic operations: Reorganized the Nagoya Plant (Oct. 2011)

#### PTA
- Swiftly stabilize production at the No. 2 production facility in India
- Become more cost competitive by cutting energy costs while establishing world-class technologies that minimize environmental impact
- Secure a market presence by deploying a market-driven partnership strategy (technology exports and offtakes agreements in expanding markets)

#### PHL/BPA/PC
- Launched Sinopec Mitsubishi Chemical Polycarbonate (Beijing), a BPA and PC joint venture between PCR Investments Japan* and China Petroleum & Chemical Corporation (Dec. 2011)
- Swiftly develop non-phosgene diphenyl carbonate and PC processes (Target: End of 2012)
- In Japan: Boost profitability by cutting costs and expanding sales of high-performance products

#### PP
- Develop advanced PP technologies at a new pilot facility (Target: End of 2013)
- License HORIZONE process (Two licensing contracts in China)
- Globally deploy PP compound operations (China, North America, Thailand, India, and Europe)
- Strengthen alliance with Borealis AG
- In Japan: Optimize PP production structure (shut down four production facilities and operate at full capacity at state-of-the-art facilities)

*an 80:20 JV between MCC and MEP
Mitsubishi Chemical Europe

APCO (Suzhou)
Newly establish a polyolefin elastomer production facility
(To be completed in May 2012)

Mitsubishi Chemical India

APCO Singapore

Mitsubishi Chemical Performance Polymers
Expand a polyolefin elastomer production facility
(To be completed in January 2012)

The Sunprene Transfer PVC compound business to Mitsubishi Chemical Performance Polymers
(To be reorganized on December 31, 2011)

Sunprene (Thailand)
Expand a PVC compound production facility
Newly establish a flame-retardant polyolefin elastomer production facility
(To be completed in March 2012)
### Globalization: BPA/PC Business in China

**Begin commercial operation of a BPA and PC JV in China**

**Sinopec Mitsubishi Chemical Polycarbonate (Beijing)**
- Established on May 21, 2009
- A 50:50 JV between PCR Investments Japan (an 80:20 JV between MCC and MEP) and China Petroleum & Chemical Corporation

<table>
<thead>
<tr>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BPA</strong></td>
<td><strong>PC</strong></td>
</tr>
<tr>
<td>Construction</td>
<td>Construction</td>
</tr>
<tr>
<td><em>End of Aug.</em></td>
<td><em>End of Sep.</em></td>
</tr>
<tr>
<td><em>Pilot operation</em></td>
<td><em>Pilot operation</em></td>
</tr>
<tr>
<td><em>Beginning of Dec.</em></td>
<td><em>Beginning of Jan.</em></td>
</tr>
<tr>
<td><em>Commercial operation</em></td>
<td><em>Commercial operation</em></td>
</tr>
</tbody>
</table>

Mitsubishi Chemical Holdings Corporation
Develop advanced PP technologies at the new pilot facility

| Process type | Regular/general purpose | Advances in PP materials | High-performance new
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas phase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slurry</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Targets**

- High-performance Reactor compounds
- High-performance Multicomponent PP

**Catalyst display**

- Metaallocene (MCN)
- Ziegler-Natta (Z-N)

**Excellent transparency**
- High impact
- Flexible
- Low heat-seal temperature

**High impact**
- Good transparency

**High Performance: PP**

- Excellent transparency
- High impact
- Flexible
- Low heat-seal temperature

- High performance
- New

- Regular/general purpose
- Advances in PP materials
- High-performance new
### 4. Growth and Cash-generating Businesses

**Progress from APTSIS 10 through First Year of APTSIS 15**

#### Taking steps for the future

<table>
<thead>
<tr>
<th>New project progress</th>
<th>FY 2008</th>
<th>FY 2009</th>
<th>FY 2010</th>
<th>FY 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance polymers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated polyethylene adhesive polymer business of JPE to MCC</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Newly establish a polyolefin elastomer production facility in China</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Expand a PVC compound production facility in Thailand</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Expand a polyolefin elastomer production facility in the U.S.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Acquire PVC compound business and transfer its business to MCPP in the U.S.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>PTA</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Built global structure by transferring headquarters functions to MCC PTA Asia Pacific Private</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Completed the No. 2 PTA production facility in India</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>PHL/BPA/PC</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Began commercial operation of the No. 2 PC production facility with melt process at the Kurosaki Plant (capacity: 60kt/y)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Acquired PC business from Royal DSM N.V.</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>To be begun commercial operation of BPA/PC production facility at Sinopec Mitsubishi Chemical Polycarbonate (Beijing), a BPA and PC joint venture between PCR Investments Japan* and China Petroleum &amp; Chemical Corporation (SINOPEC)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>*an 80:20 JV between MCC and MEP</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>PP</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Began commercial operation of a PP compound production facility in Thailand</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Began commercial operation of a PP compound production facility in Foshan, China</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Began commercial operation of the No. 4 PP production facility at the Kashima Plant (capacity: 300kt/y)</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Began commercial operation of a PP compound production facility in India</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

*Good Chemistry for tomorrow*

Mitsubishi Chemical Holdings Corporation
### Technology License Dept. established in January 2011

<table>
<thead>
<tr>
<th>Processes</th>
<th>Plant launches</th>
<th>Locations</th>
<th>Capacity (kt/y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG (OMEGA process)</td>
<td>2008-2010</td>
<td>Korea, Saudi Arabia, Singapore</td>
<td>390, 600, 750</td>
</tr>
<tr>
<td>PTA</td>
<td>2008-2010 From 2011</td>
<td>India, Poland</td>
<td>800, 600</td>
</tr>
<tr>
<td>BPA</td>
<td>From 2011</td>
<td>Thailand, China, Korea</td>
<td>150, 150, 150</td>
</tr>
<tr>
<td>PP</td>
<td>From 2011</td>
<td>China, China</td>
<td>200, 200</td>
</tr>
<tr>
<td>PTMG</td>
<td>2008-2010 From 2011</td>
<td>China</td>
<td>25, 65, 80</td>
</tr>
<tr>
<td>Maleic anhydride</td>
<td></td>
<td>Taiwan, Russia</td>
<td></td>
</tr>
<tr>
<td>Acrylic acid</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments
(excluding carbon, MMA/PMMA)

1. Business Climate Assessment
2. Basic Strategies
3. Business to be Restructured
4. Growth and Cash-generating Businesses
5. Next-generation Growth Business
   - Deliver New Materials that Contribute to the Environment and Sustainable Carbon Society
6. New Technologies
   - Raw Materials Diversification and Other Technologies
7. Progress in Our Business Strategies under APTSIS 15
Sustainable Resources

Delivering new materials that contribute to the environment and to sustainable carbon society

Production techniques employing plant-derived materials

- Glucose
- Bio-succinic acid
- Bio-1,4-BG
- Isosorbide

Alliance with BioAmber, Inc.

Isosorbide polymer

PTT MCC Biochem established (March 2011)

GS Pla

Bio-C4 chain
1,4-BG
PTMG
PBT

Potential future initiatives with Genomatica including butadiene

Alliance with Genomatica, Inc.
6. New Technologies

Raw Materials Diversification Technologies

Converting from conventional plant operation to optimal plant operation

Raw materials diversification technologies

- Unused gas
- DTP: Dimethylether to propylene
- BTcB: Butene to crude butadiene
- C2: Surplus
- C3: Shortfall
- C4: Shortfall

Crackers

Derivatives
Develop new butadiene sources through process of oxidative dehydrogenation of butene

- Create new butadiene manufacturing routes that do not rely on naphtha cracking
- Aiming to achieve this goal during fiscal 2012
Efficiently produce propylene with methanol/methanol derivatives and olefins

- Developed DTP process with JGC Corporation funded by New Energy and Industrial Technology Development Organization (NEDO)
- Completed proving tests with pilot operation
- Preparing the technology licensing with JGC
Industrial Materials Domain—Business Strategies for the Chemicals and Polymers Segments (excluding carbon, MMA/PMMA)

1. Business Climate Assessment
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## 7. Progress in Our Business Strategies under **APTSIS 15**

### Progress in Olefin Aroma and Polyolefin

#### Considering to implement measures ahead of schedule

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**NNE:** Nishi Nippon Ethylene

*Considering to implement measures ahead of schedule*
### Progress in Derivatives

#### Shut down
- PVC: Mizushima Yokkaichi
- VCM: Mizushima
- AO/HA: Mizushima

#### Sales reduction of around ¥150 billion
Increase revenues of about ¥13 billion by business withdrawals

#### PTA
- Swiftly stabilize the No. 2 production facility in India

#### BPA/PC
- Develop new environmentally-friendly technologies
- Start Chinese operations

#### EO/EC
- Set up EO center
- Boost EC capacity

#### Other derivatives optimization
## Progress in Sustainable Resources and New Technologies

### Sustainable resources
- **Isosorbide polymer**
- **GS Pla**
- **Bio-succinic acid**
- **Bio-1,4-BG**

### New technologies
- **Butadiene**
- **Propylene**
- **1-hexene**
- **BPA/PC**
- **Non-phosgene DPC**
- **Non-phosgene PC**

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7. Progress in Our Business Strategies under APTSIS 15

Enhanced Earnings from Progress with Business Strategies

- Earnings contributions of sustainable resources
- Earnings from licensing
- Strengthened earnings from growth and cash-generating businesses
- Strengthened earnings from core businesses

Mitsubishi Chemical Holdings Corporation