Competitiveness
Roadmap of the
Tool & Die Industry

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Treasurer, Philippine Die and Mold Association (PDMA)
OUTLINE OF PRESENTATION:

• What is the Tool and Die Industry?
• Current State of the Industry
• Support to the Industry Development
• SWOT
• Tool and Die Industry Roadmap
  - Short-term
• Action Plans
What is the Tool and Die Industry?
What is the Tool and Die Industry?

- An industry that uses general and specialized metal cutting technology to fabricate dies, molds and toolings employed by manufacturing industries to convert raw material into a required shape.

- An essential support to the manufacturing industry
Molds for Plastic Injection
Molds for Plastic Blow Molding
Dies for Metal Stamping
Dies for Metal Stamping
Dies for Metal Forging
Mold for Die Casting
Semiconductor Lead Frames Dies and Encapsulation Mold
Current State of the Industry
INDUSTRY STRUCTURE OF THE PHILIPPINE TOOL AND DIE INDUSTRY

Suppliers
- Tool/Special Steels
- Metalworking Equipment
- Cutting Tools/Consumables
- Software

Post-cutting Treatments
- Heat Treatment
- Surface Treatment

Processes
- Plastic Injection
- Stamping
- Hot Forging
- Die Casting
- Rubber Curing
- Glassmaking
- Plastic Blow Mold

Downstream Industry
- HOME WARES/FURNITURES
- ELECTRONICS/SEMICONDUCTORS
- AUTOMOTIVE/MOTOR VEHICLE
- FOOD/BEVERAGE
- HEALTH/COSMETICS

Toolings, Die and Mold making
- Craftsmen/Programmers
- Utilities
Housewares and Toys

Monobloc Chairs

Kitchen wares

Toys
Electronics and Appliance Industry

Cellphone parts

Electric Fan parts

USB Encapsulation
Packaging for Food, Industrial, Pharmaceutical
Semiconductor Industry

Lead Frames

Integrated Circuits (ICs)
Geographical Distribution of Tool and Die Shops

<table>
<thead>
<tr>
<th>Area</th>
<th>No. of Shops</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCR</td>
<td>52</td>
<td>43</td>
</tr>
<tr>
<td>Region III</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Region IV</td>
<td>44</td>
<td>36</td>
</tr>
<tr>
<td>Region VII</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Region XI</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The Philippine Tool and Die Industry A 2006 Study
Year of Establishment – Philippine Tool and Die Shops

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951-1955</td>
<td></td>
</tr>
<tr>
<td>1956-1960</td>
<td></td>
</tr>
<tr>
<td>1961-1965</td>
<td>30</td>
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<tr>
<td>1966-1970</td>
<td>25</td>
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<tr>
<td>1971-1975</td>
<td></td>
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<tr>
<td>1976-1980</td>
<td></td>
</tr>
<tr>
<td>1981-1985</td>
<td>15</td>
</tr>
<tr>
<td>1986-1990</td>
<td>10</td>
</tr>
<tr>
<td>1991-1995</td>
<td>5</td>
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<tr>
<td>1996-2000</td>
<td></td>
</tr>
<tr>
<td>2001-2005</td>
<td>7</td>
</tr>
<tr>
<td>2007</td>
<td>5</td>
</tr>
</tbody>
</table>
## Form of Business Organization in the Philippine Tool and Die Industry

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Shops</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Proprietorship</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Partnership</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Corporation</td>
<td>90</td>
<td>74</td>
</tr>
<tr>
<td>Cooperative</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Government</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>121</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: The Philippine Tool and Die Industry A 2006 Study
Philippine Export Data (2000 – 2012)

YEAR

Amount, US $ (Millions)


0 2 4 6 8 10
## Asian Tool and Die Shops and Local Demand

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Shops</th>
<th>Total Local Demand* US$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>170</td>
<td>45**</td>
</tr>
<tr>
<td>Indonesia</td>
<td>280</td>
<td>333</td>
</tr>
<tr>
<td>Malaysia</td>
<td>410</td>
<td>273</td>
</tr>
<tr>
<td>Singapore</td>
<td>1,200</td>
<td>840</td>
</tr>
<tr>
<td>Thailand</td>
<td>1,110</td>
<td>760</td>
</tr>
<tr>
<td>China</td>
<td>30,000</td>
<td>12,740</td>
</tr>
<tr>
<td>India</td>
<td>NA</td>
<td>2,500</td>
</tr>
<tr>
<td>Japan</td>
<td>6,700</td>
<td>18,400</td>
</tr>
<tr>
<td>Korea</td>
<td>4,000</td>
<td>2,800</td>
</tr>
<tr>
<td>Taiwan</td>
<td>3,500</td>
<td>1,780</td>
</tr>
</tbody>
</table>

* Cost of Local Production + Importation

** Estimated

Sources: The Philippine Tool and Die Industry A 2006 Study and FADMA Country Members Reports Year 2007
Challenges and Industry Concerns

1. Industry Costs
   - Retraining costs due to high turnover of die/mold maker
   - High cost of inputs, power, capital equipment

2. Technical
   - Operation of advanced machines for improved productivity (high speed machining, multi-axis, etc.)
   - Lack of engineering services and support infrastructure

3. Market
   - Domestic market for tool and die is small
   - Procurement decisions for die and mold are decided outside the country
## Production of ICs

<table>
<thead>
<tr>
<th>Process start</th>
<th>Molding</th>
<th>End of Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dies and Jigs for die attach and wirebonding</td>
<td>Molds for serial feed molds or epoxy resin encapsulation</td>
<td>Dies for deflash/trim/form/singulation (DTFS)</td>
</tr>
<tr>
<td>&gt;90% localized</td>
<td>100% Imported</td>
<td>&gt;90% localized</td>
</tr>
</tbody>
</table>
## Costing of a Plastic Injection Mold*

1. **Die Material Cost**  
   15.0%

2. **Basic Manufacturing Cost**  
   33.5%

3. **Mold Base Cost**  
   34.7%

4. **Secondary Elements (screws, ejectors)**  
   5.8%

5. **Die Design Fees**  
   11.0%

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100.0%

Support to the Industry Development
POLICY REFORMS

• Government should introduce policy reforms that will encourage large companies to procure their requirements for die and mold from the local industry.

• Strengthen the gathering of statistics related to data from industry particularly for manufacturing and for SMEs
FISCAL INCENTIVES SCHEMES

- Income tax holiday is offered to tool and die companies and some forms of this scheme include:
  a) 100% exception from corporate income tax for 3 years if expansion project
  b) 4 years if non-pioneer project and
  c) 6-years in pioneer project

- Tax and duty exemption given on imported parts and/or supplies

- Duty-free importation of capital equipment, spare parts and other accessories
SPECIFIC INDUSTRY PROGRAMS

- Listing of Tool and Die as a separate preferred activity in future Investment Priority Plans (IPP)
  - Income tax holidays for expanding and pioneering companies
  - Zero tax duty on equipment, parts, materials and accessories used in the Tool and Die industry
  - Tax credit on imported materials and supplies
  - Exemption from internal taxes levied on domestic products manufactured outside economic zones

- Financial incentives to companies engaged in:
  - training and skills accreditation of tool and die makers
  - manufacture of mold material (tool steels, aluminum, etc.), mold base, secondary elements, toolings and related consumables (coolants)
  - post cutting surface treatment, e.g. vacuum heat treatment, nitriding, TiN coating by PVD or CVD, etc.
SWOT Analysis
**Strength**

- Skills and competence of tool & die engineers, technicians and specialists

**Weaknesses**

- The Philippines is not yet well known around the world as a metal producing country
- High cost of inputs, i.e. raw materials, power, manpower, cost of production, coolants and molds
- Unavailability of raw materials in the Philippines
Weaknesses

- Lack of capital/funding/budget issues acquiring the technology in order to be more competitive
- Shortage of competent and skilled tool & die engineers, technicians and specialists
- Low salary in local tool & die sector causes skilled Filipinos to go abroad
- Limited capability on repair of CNC machines
- Inability to upgrade capability in terms of software applications
- Limited capability to supply the dies and mold requirements of local industries
Opportunities

- Use of the latest technology
- Available new technologies and materials for production
- Foreign exchange rates
- Competitiveness of Philippine Tool & Die production
- Demand for metal products
- Trade fair participation
- Development of products for local and global market
- Alignment of MIRDC and DOST programs to industry needs
- Philippines is one of the growing countries in Asia (along with Vietnam and Indonesia)
- Growing foreign investments
- Increase requirements for Filipino skilled manpower
Threats

• Cheap imported products from China, i.e. glass molds, rubber molds, stamping dies, jigs & fixtures
• China-made dies and molds are flooding the industry
• Increasing tool & die production in China and Vietnam.
• Decisions for die and mold procurement in large companies are decided by their principal outside the country
Tool & Die Industry Roadmap
Vision

a locally-dominant, globally-competitive self sustainable tool and die industry by the year 2024.
Goals/Objectives

1. To increase the number of skilled and competent personnel as well as enhance the current level of technical skills of local tool and die manufacturers;

2. To enhance the capabilities of the local industry by supporting modernization and meeting the technological requirements of the tool and die stakeholders;
3. To reduce, if not eliminate, demand for internationally outsourced products and services by developing local suppliers of production inputs (e.g. raw materials, equipment, and maintenance services).
Strategies

1. Manpower Improvement
2. Technology Upgrade and Modernization
3. Indigenous Sourcing

**Manpower Development**

• Create an updated and relevant training curriculum that will match the skills of new graduates to the needs of the employer

• Craft new certification schemes for accrediting the skills of existing tool and die specialists

• Formulate marketing strategies to attract local talents to tool and die courses and eventually increase the manpower pool

• Create a standardized salary and incentive scheme that will improve the level of compensation of workers and encourage engagement of talents to the industry

Technology Upgrade and Modernization

- Do a comprehensive survey of the industry's current technological (hardware and software) competency and its technology needs
- Do a survey of best practices and create a manual describing effective quality management and successful strategies
- Fund researches that will improve the industry such as researches on value-adding techniques (e.g. plating or hard coating) or optimizing processes
- Establish the Die Design Facility center
- Establish the Die and Mold Solution Center
- Create a Tool & Die Engineering Course
Indigenous Sourcing

• Do an industry survey that will identify machinery, parts, engineered products and servicing jobs that can be locally done

• Create a pool of service engineers expertly trained on tool and die equipment (e.g. CNC) maintenance

• Fund researches on value adding processes and develop engineering service industries
# Short Term Concrete Projects

<table>
<thead>
<tr>
<th>MAJOR REFORM ISSUES</th>
<th>CONCRETE PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Integration of tool and die in education system as well as creation of Tool and Die engineering and vocational courses.</td>
<td>• Make available Full Scholarships Programs to students (a minimum of 5-year employment contract) of Tool and Die engineering and vocational courses.</td>
</tr>
<tr>
<td></td>
<td>• Creation of a certification system and skills accreditation scheme.</td>
</tr>
<tr>
<td>2. Open the industry to partnerships or joint ventures with foreign companies to improve the reliability image of the country.</td>
<td>• Advocate for the inclusion of Tool and Die in the IPP.</td>
</tr>
<tr>
<td>3. Sustain and support the enhancement of capabilities of the local tool and die industry.</td>
<td>• Establishment of a Die and Mold Solution Center.</td>
</tr>
</tbody>
</table>
Thank you