Green Productivity for Green, Inclusive Development: A Commitment Today for a Greener Tomorrow

APO 3rd World Conference on Green Productivity
APO Center of Excellence on Green Productivity: Milestone of APO movement

Achievements of Green Factory Promotion

Speaker: Ms. Dinah Tai,
Deputy Project Manager of Foundation of Taiwan Industry Service

2014.11.04
Background of Green Factory Corps

-The Technical Services of APO COE GP

2013 APO COE GP hosted the *Workshop on Development of Model Project for Green productivity and Research on Needs Assessment of Member Countries* in Taipei

- Assess and document the extent of implementation and adoption of GP in member countries and identify emerging areas where GP needs to be focused to support member countries’ needs.
- Help the COE GP and the APO in designing and implementing GP activities that are relevant and attuned to the needs of member countries, focusing on the following 4 models to provide technical services:
Foundation of Taiwan Industry Service (FTIS)

**Introduction**

- FTIS was established in 1998, aiming to improve industrial safety, environmental protection, and sustainable competitiveness of industries in Taiwan. There are around **300** employees in FTIS.

- FTIS is entrusted from the Industrial Development Bureau, Bureau of Energy, EPA, and Water Resources Agency to conduct strategic planning, counseling, guidance and training programs regarding sustainable issues.

**Organization**

**Fields of Specialty**

- Sustainable Planning
- Pollution Prevention
- GHG Management
- Respond to global regulation
- Management System
- Cleaner Production
- Carbon footprint
- GSCM
- CSR
- Energy Conservation
- Carbon Neutral
- Eco-design
- Green Factory
- LCI
- Energy Management
- EPD
- Green Factory

**Center for Environmental and Resource Service**
**Industrial Safety Division**
**Eco-technology Division**
**Sustainable Management and Innovative Technology Division**
**Training Program Division**
**Carbon Strategy and Technical Service Division**
**Administration Division**
**Special Project Division**
Framework and Definition of Green Factory (GF)

Green Factory (Labeling System)
Integration systematic mechanism of Green Building and Cleaner Production, to reduce energy and resources consumption and environmental impact of factory construction, operation, and product life cycle. Expecting to enhance eco-friendly industries and products to fulfill goal of low-carbon for industries.

Green Building Label
Building with considerations of ecological, energy saving, waste reduction, and health.
- EEWH-GF: New building.
- EEWH-RN: Existing building (renovated).

Cleaner Production Certificate
“The continuous application of an integrated preventive environmental strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment.”
- General Applicable Indicators (CP-GP): For all sectors.
- Sector Specific Indicators (CP-ISP): Only applicable for specific sector.
- Cleaner Production Framework

**Environmental-related management systems in the world**

- Conservation of Energy Resources
- Green Manufacturing Processes
- Pollution Controls and End of Pipe Treatment Processes
- Environmental-friendly Designs

**Eco-design**

- Environmental-related indicators and assessment systems developed by national or international organizations
- Green Management
- Corporate Social Responsibility
- Innovative Thinking
- Others

**Green Manufacturing**

- Cleaner Production indicators and assessment system developed by industrial associations or enterprises
- Green Management & Social Responsibility
- Innovative and others

**Innovative Thinking**

- International trends in industrial sustainable development

**Green Management & Social Responsibility**

- Cleaned Production Framework
Total Benefits of Green Factories in R.O.C.

- 400 million kWh
- 22.2 million tons of water saved
- 7.88 million tons of LNG saved
- 2,800 tons of waste reduction
- 356,000 tons of CO₂ reduction
- USD 61.3 million cost saving
Achievements in 2013

-Overview

• GF Experts Database
  - Compile international and domestic experts’ information including Cleaner Production, Green Building, Green Building Material, Green Factory etc.
  - Establish GF Experts Database.

• Future Plan
  - Define the target cooperative countries in Domestic Experts Working Meeting
  - Set up the short-term, mid-term and long-term promotion goals.
  - Invite officers from Indonesia to join the workshop, and discuss the future cooperation.

• International Workshop
  - Organize 12 domestic experts whose specialty includes Green Factory into GF Green Corps.
  - Hold Workshop on GF Innovative Practice Promotion, and invite GF Green Corps members, 1 Indian expert and 5 member country delegates (Indonesia, India, Nepal, Malaysia and Pakistan) to participate in.

• Publication
  - The case studies of the best practices on GF policy implementation and technology application of public and private establishments.
  - Compile domestic GF practical technology cases to finish Overview and Case Studies on Green Factory in R.O.C. 2013.
-A. Green Factory Experts Database Establishment

<table>
<thead>
<tr>
<th>GF-related Technology</th>
<th>Number of Experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Building (Material)</td>
<td>6</td>
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<tr>
<td>Energy and Resource Saving</td>
<td>11</td>
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<tr>
<td>Green Manufacture</td>
<td>66</td>
</tr>
<tr>
<td>End-of-pipe Treatment</td>
<td>14</td>
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<tr>
<td>Eco-friendly Design</td>
<td>12</td>
</tr>
<tr>
<td>Green Management and Social Responsibility</td>
<td>11</td>
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<tr>
<td>Innovative Thinking</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>122</strong></td>
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</tbody>
</table>

Green Factory Database includes **107 domestic experts** and **15 international experts**.
DATE: 2013/11/4~11/8

Day 1
- Opening
- International Experts’ Speech

Day 2
- Domestic Experts’ Speech
- 2013 Green Production International Forum & APO COE GP Starting Ceremony

Day 3
- Case Study of Green Factory Building in R.O.C.
- Visit Intelligent Living Space in Taipei
- Experience Sharing on Green Factory Label Awarding
- Visit Champion Building Materials Co., Ltd.

Day 4
- Visit TSMC Fab 15
- Visit Theme Pavilion of Green Building Materials

Day 5
- Discussion of Cooperative Strategies and Opinion Exchanges
- Awarding Presentation and Closing Ceremony
-B. International Workshop (2/2)

◆ Group Discussion

• Establish GF Promotion team
• Discuss on incentives of GF system
• Hold GF seminar and workshop
• Demonstrate GF programs
• Carry out int’l exporters interactions
• Interact with APO member countries on GF issues
Overview and Case Studies on Green Factory in R.O.C. 2013

APO Center of Excellence on Green Productivity

Foreword

Message

Acknowledgments

1 Introduction

2 Global Situation and Trend on Green Factory

3 Understanding R.O.C. Green Factory Expectation

4 Key Elements of R.O.C. Green Factory Requirement

5 Case Studies

References

Contact List

How APO Member Countries Will Benefit
-D. Future Plan

<table>
<thead>
<tr>
<th>Short-Term</th>
<th>Mid-Term</th>
<th>Long-Term</th>
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<tbody>
<tr>
<td>Produce GF Publication</td>
<td>Publish in MCs</td>
<td>Enhance public understanding of GF</td>
</tr>
<tr>
<td>Hold an exchange activity in MCs</td>
<td>Introduce R.O.C. green technology</td>
<td>Root GF system concept deeply in MCs</td>
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<tr>
<td>Increase MCs’ green tech. needs by GF system</td>
<td>Introduce R.O.C. green products and facilities</td>
<td>Promote bilateral trade opportunities</td>
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Domestic Experts Working Meeting

GF Green Corps Members
Achievements in 2014

-Technical Service Exchange Activity -- Green Factory

◆ Project Collaboration Partners

- R.O.C. Central Government: Industrial Development Bureau (IDB), MOEA, R.O.C.
- APO & APO Agency in R.O.C. (China Productivity Center, CPC)
- Foundation of Taiwan Industry Service (FTIS)
- The Centre of Public Communication Division, Ministry of Industry (MOI), Republic of Indonesia (R.I.)

◆ Plan

- Preparatory Meeting (August)
- GF Green Corps Technical Service Exchange Activity (October)
-Schedule of Implement

**Contact Window**
- May
- June
- July
- Aug.
- Sep.
- Oct.

**R.I.’s Needs Survey**
- Target Industries
- Specific Green Factory (GF)/Cleaner Production (CP) Technology
- Green Factory Introducing Feasibility

**Form of Activity**
- Workshop
- Information Meeting
- Mini-Exhibition
- Cooperative Discussion Meeting
- Visiting Team

**Preparatory Meeting**
- Date, Position and Form of Activity
- Attendees of Activity (Ex. Gov./Association/Company)
- Gov. Department/Association Visiting
- Specific Factory Visiting

**Preparation**
- Activity Preparation
- Expert Invitation
- Company Invitation
- Seminar Preparation
- Document Preparation

**Major Activity**
- Green Factory Promotion
- Specific Industry’s need of GF/CP
- GF Technology Introducing
# GF Green Technical Service Corps Members (1/2)

<table>
<thead>
<tr>
<th>No.</th>
<th>Company</th>
<th>Name</th>
<th>Title</th>
<th>Specialty</th>
<th>Technology &amp; Product &amp; Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sustainable Development Division, IDB, MOEA, R.O.C.</td>
<td>Dr. Liang-Tung Chen 陳良棟</td>
<td>Deputy Chief 副組長</td>
<td>Green Factory</td>
<td>■ Green Factory Labelling System</td>
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<td>■ Gov. industrial project management</td>
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<td></td>
<td></td>
<td>■ Sustainable development promotion</td>
</tr>
<tr>
<td>2</td>
<td>Taiwan Energy Service Association 台灣能源技術服務產業發展協會</td>
<td>Mr. Hung-Yao Chao 趙宏耀</td>
<td>Executive Director 常務理事</td>
<td>Energy efficiency management</td>
<td>■ ESCO</td>
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<td>■ Energy management</td>
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<td>■ Energy saving technologies</td>
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<td>3</td>
<td>Lnd Education System, Zero-Carbon 零碳行動有限公司</td>
<td>Mr. Vincent Y. Chen 陳揚文</td>
<td>CEO 執行長</td>
<td>Green building</td>
<td>■ LEED certification</td>
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<td>■ Environmental education</td>
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<td>■ ISO 50001 certification</td>
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<tr>
<td>4</td>
<td>Sustainable Environmental Technology and Management Co., Ltd. 永發環境(股)公司</td>
<td>Mr. Chih-Ku Chen 陳致谷</td>
<td>Managing Director 總經理</td>
<td>Product environmental management</td>
<td>■ Product Life Cycle Assessment</td>
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<td></td>
<td>■ Product environmental impact assessment tool development</td>
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<td></td>
<td>■ Product environmental management strategy assessment</td>
</tr>
<tr>
<td>5</td>
<td>G&amp;F Environmental Technology Inc. 進方環保科技有限公司</td>
<td>Mr. Wen-Shan Wang 王文山</td>
<td>General Manager 總經理</td>
<td>Pollution Control</td>
<td>■ Drinking water treatment</td>
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<td>■ Waste treatment</td>
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**GF Green Technical Service Corps Members (2/2)**

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<th>Title</th>
<th>Specialty</th>
<th>Technology &amp; Product &amp; Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Ship and Ocean Industries R&amp;D Center 船舶暨海洋產業研發中心</td>
<td>Mr. Shih-Hsien Lee 李思賢</td>
<td>Engineer 工程師</td>
<td>Green building</td>
<td>Building energy management, Wind power assessment</td>
</tr>
<tr>
<td>7</td>
<td>Cheng-Long Intelligent Engineering Co., Ltd. 承隆智能(股)公司</td>
<td>Mr. Yang Chung 鍾裕揚</td>
<td>Business Manager 業務經理</td>
<td>Energy Efficiency Management</td>
<td>ESCO application, Energy management, Energy saving technologies</td>
</tr>
<tr>
<td>8</td>
<td>Foundation of Taiwan Industry Service (財)台灣產業服務基金會</td>
<td>Mr. Sandy Shen 沈坤伸</td>
<td>Manager 經理</td>
<td>Cleaner Production</td>
<td>Industrial sustainable development, Environmental label, Chemical engineering</td>
</tr>
<tr>
<td>9</td>
<td>Foundation of Taiwan Industry Service (財)台灣產業服務基金會</td>
<td>Ms. Dinah Tai 戴茉帆</td>
<td>Project Deputy Manager 專案副理</td>
<td>Sustainable development</td>
<td>Sustainable issue consultancy, Green Factory promotion, Carbon neutral and reduction</td>
</tr>
<tr>
<td>10</td>
<td>Foundation of Taiwan Industry Service (財)台灣產業服務基金會</td>
<td>Ms. Nelly Chen 陳念妤</td>
<td>Engineer 工程師</td>
<td>Green Factory</td>
<td>APO Project Execution, Wastewater Reuse</td>
</tr>
<tr>
<td>11</td>
<td>National Taiwan University 國立台灣大學</td>
<td>Mr. Paul Liu 劉展嘉</td>
<td>Observer 観察員</td>
<td>Environmental management</td>
<td>Material flow analysis</td>
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</tbody>
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# GF Green Corps Technical Service Exchange Activity

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY</th>
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| 10/13 (Mon) | • GF Green Corps Departure  
• Preparatory Meeting  
• Welcome Dinner |
| 10/14 (Tue) | • National Seminar  
- Policy  
- Technology |
| 10/15 (Wed) | • Site Technical Consultancy  
- PT. Pindo Deli Pulp and Paper Mills  
- PT. Lucky Textile Group |
| 10/16 (Thr) | • Cooperation Meeting |
| 10/17 (Fri) | • GF Green Corps Departure  
Welcome Dinner  
National Day Celebration  
National Seminar |
National Seminar on Green Industry with theme: Green Industry as a World Trendy to Better Achievement

Policy

R.I. & R.O.C.

Technology

Energy Saving

Green Building

Waste Management

Pollution Control

Mr. Ansari Bukhari
General Secretary
MOI, R.I.

Mr. Arryanto Sagala
Director General of BPKIMI
MOI, R.I.

Dr. Liang-Tung Chen
Deputy Chief
IDB, MOEA
National Seminar: Policy


**Green Factory Label (R.O.C.)**

- **Authority**: IDB, MOEA
- **Purpose**: Intergrade Green Building and Cleaner Production, to reduce energy and resources consumption and environmental impact of a factory manufacturing life cycle, to fulfill goal of low-carbon for industries which conform the global tendency.

**Green Industry Award (R.I.)**

- **Authority**: MOI, R.I.
- **Purpose**: Focus on upgrade the SMI’ competitiveness, producing efficiency and market acceptance, R.I. initiate this award to encourage best enterprises which implement better practices on resources and energy using, waste minimization and sustainable production.
• Experience sharing on technical aspects of green building energy saving, cleaner production, resource and energy saving, green production, waste minimization and waste water treatment.

• Holding the bilateral interaction on green industry and technology which could provide new green concepts to RI industries and introduce R.O.C. green technologies to R.I. The deeper future cooperation is expectable.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive Energy Efficiency Service in HVAC System</td>
<td>Hung-Yao Chao Executive Director of Taiwan Energy Service Association (R.O.C.)</td>
</tr>
<tr>
<td>Cleaner Production Application and Waste Water Treatment Technologies</td>
<td>Wen-Shan Wang General Manager of G&amp;F Environmental Technology Inc. (R.O.C.)</td>
</tr>
<tr>
<td>Unlocking the Economic Potential of Waste Prevention of Industrial Sector in R.O.C.</td>
<td>Chih-Ku Chen Managing Director of Sustainable Environmental Technology and Management Co., Ltd. (R.O.C.)</td>
</tr>
</tbody>
</table>
PT Pindo Deli Pulp & Paper (PDPP) – affiliate with Asia Pulp & Paper (APP), is one of the world’s leading group a wide range of paper, extends from commodity base paper to value added art paper, that includes cast coated paper, tissue, specialty paper, carbonless paper and office products, with multi-locational manufacturing facilities in Karawang (West Java) & Perawang (Riau).

Pindo Deli has been awarded the Green Industry Award, and achieved the ISO 14001 and ISO 9001:2000 certification for its activities in Environmental Management System and Quality Management System. PDPP shared their strategies on environmental protection as well as the saving plan on energy and resource consumption.

About the ventilation equipment, PDPP has installed several wind forced balls on the roof of factory buildings. GF Green Corps experts suggested that PDPP could use green building concept of nature wind flow to modify the building. By improving the ventilation of better quality of indoor air, it would also benefit the employees’ health.
PT. Lucky Textile Group (LTG) was established in 1989 together with in-house Weaving, Dyeing, Printing and Finishing facilities. The unit is spread over an area of 13 hectares at Cikarang Barat, about 35 Kms from Jakarta. This company’s production takes place 24 hour a day, 7 days a week, with an installed capacity of 70,000 spindles and an output of more than 1200 tons of yarn per month.

The company has achieved the ISO 9001:2000 certification for its activities in Environmental Management System and Quality Management System, “OKOTEX” Certification for harmful Substances etc. For further improvement, LTG addressed their need about end-of-pipe treatment system to GF Green Corps members.

Lucky Print’s anaerobic treatment process should improve removal performance. There are 2 suggestion from GF Green Corps members: 1) trace and detect the target substance from manufacturing process; 2) add nutrient source to promote anaerobic bacteria grown.
◆ Cooperation Meeting (1/2)

• Participants:
  – Mr. Yang Yang Setiawan, Secretary of Agency for Industrial Policy, Business Climate and Quality Assessment (BPKIMI), MOI, R.I.
  – Dr. Ngakan Timur Antara, Director of the Center for Green Industry and Environment Assessment, MOI, R.I.
  – GF Green Corps members (e.g. Dr. Liang-Tung Chen, Deputy Chief of Sustainable Development Division, IDB, MOEA, R.O.C.)

• Purposes:
  – Holding bilateral cooperation meeting with deep discussion on future cooperation plans.
Cooperation Meeting (2/2)

Formations of Future Cooperation
- Training Courses of GF Labeling System
- Workshop on Green Technology
- Green Factory Demonstration Project

Expectations
- Increase the visibility and awareness of both Green Industry Award and Green Factory Label.
- Learning from R.O.C. GF experiences and using R.O.C. green technology to help the industrial development in R.I..

Cooperation Routes
- Via the platform of APO projects, sending R.I. representatives to R.O.C. to join the GF evaluation process or participating GF training courses.
- Invite R.O.C. GF related experts to R.I. to share the experiences or carry out the project of GF demonstration projects.
Expected Benefits

◆ Green Factory Label System Introduction

Introduce the Green Factory Label System concept into Indonesia, and diffuse to other countries.

Base on the Green Factory Label System introducing, bilateral industries could exchange the related technologies/services/products/training courses and create more green business opportunities.

◆ Cleaner Production Technologies Promotion

Help local companies solve the environmental problems by cleaner production technologies such as energy saving and pollution control, etc.

◆ Business Opportunities Seeking and Exchanging

*Green business opportunities will be brought by exchanging activities and cooperative meetings for both side.*
Thank you for your attention

Ms. Dinah Tai
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Foundation of Taiwan Industry Service

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E-mail: dinah.tai@ftis.org.tw