1. Globalization of TOYO
2. TOYO in Upstream field
3. TOYO in Power sector
4. TOYO in Brazil
Globalization of Toyo

- TOYO was established in 1961 as subsidiary of Toyo Koatsu Industries.
- TOYO has come into globally integrated operation through organic growth, M&A and Joint Venture formation with local Partners.

Footsteps for Current TOYO

- 1961: Toyo-Japan
- 1970: Toyo-India
- 1998: Toyo-Malaysia, Toyo-Thai
- 2010: IKPT(Indonesia), Toyo-Canada, Toyo-China, Toyo do Brasil, TSPI (Brasil)
- 2012: Toyo-Korea, Toyo-Japan, Toyo-India, Toyo-Malaysia, Toyo-Thai, IKPT(Indonesia), Toyo-Canada, Toyo-China, Toyo do Brasil, TSPI (Brasil)
## Upstream Business Alliance Service Model

◆ **Frame Contract : General Engineering Service Agreement (GESA)**

<table>
<thead>
<tr>
<th>Area</th>
<th>Application</th>
<th>Services</th>
</tr>
</thead>
</table>
| Field Operator (Operation Company)                | • Modernizing of fields  
• State of Art Technology Introduction  
• Recovery Ratio Improvement (IOR,EOR ) | • Policy : Planning with Operator.  
• Stance: Find the fittest Solution  
• Period : Life Time of Fields |
| National Oil Company (NOC) and its Regional Oil Company (ROC) | • Support to Production Mode  
Planning & Fields Application based on Energy Policy | • Policy : Planning with NOC/ROC  
• Stance: Find solution to value add for NOC/ROC (not as EPC contractor) |
Client: South Oil Company (SOC)/ Republic of Iraq
Period: 2012 ~

Scope & Services
Technical services to SOC’s upstream projects.

Ongoing work
Crude Oil Evacuation project
- 6milBOPD by 2015
- 9mil BOPD by 2017
- 2,000km pipeline and associated facilities
Upstream Business
National Energy Planning

- Work: Gas Master Plan based on National Energy Strategy
- Client: IRAQI Government (Ministry of Oil, etc.)
- Work Start: May 2013
- Fund: by JICA for Step-1
Upstream Business
Asset Management Model

- Solution for IOR/EOR application
- Concession/Products possessed by Client
- Asset owned by Contractors (with Finance)
- Risk share contract with Client

IOR = Improved Oil Recovery
EOR = Enhanced Oil Recovery

Asset Management Model

Client (Field Concessionaire)

- Cost Compensation & Fee based on the incremental oil production
- Oil Field Development Service with IOR/EOR technologies

SPC (Special Purpose Company)

Equity Holders

- TOYO
- Equity Partner(s)

Consortium for Technical Service

- TOYO
- Technical Partner

Production Profile

Asset Management (Incremental Oil by IOR/EOR)

Tertiary Recovery (Chemical/CO2/Steam)

Infill Drilling/Optimization

Primary Recovery

Production Rate

Years

10
20
30

Production Profile

Primary Recovery

2nd Recovery (Water/Gas Injection)

Infill Drilling/Optimization

Production Rate

Years

10
20
30

Solution for IOR/EOR application

Concession/Products possessed by Client

Asset owned by Contractors (with Finance)

Risk share contract with Client

IOR = Improved Oil Recovery
EOR = Enhanced Oil Recovery

Commercial Banks

Governmental Finance Institution
Upstream Business
Micro-GTL

1,000 bpd Micro-GTL on 100,000 bpd FPSO
- 10 mmscfd associated gas = 1,000 bpd FT products

1,000 bpd Micro-GTL unit
approx. 20% of total deck space
Upstream Business
Micro-GTL module
Upstream Business
FLNG

LiBro™ FLNG
Owner: SPCs of Gulf JP Co., Ltd.
Location: Seven Sites in the suburbs of Bangkok, Thailand
Project Start: October 2010 – First Project
Completion: October 2013 – Last Project
Contract Type: Lump Sum
Scope of Plant: Configuration
2GTG-2HRSG-1STG per each Project
Capacity: 110MW x 5 Projects
120MW x 2 Projects
Main Equipment Supplier: Equipment Supplier
Gas Turbine: Siemens “SGT800”
Steam Turbine: MES (Japan) [*1]
HRSG: DKME (Korea) [*2]

[*1] Mitsui Engineering & Shipbuilding Co., Ltd.
[*2] Daekyung Machinery & Engineering Co., Ltd.

As of September 2013
Power Sector
Thailand Cogeneration 7 Projects
Concurrent Engineering & Paralleled Construction by Single Project Management Team
Toyo in Brazil (past record)

Since 1965, Total 37 Projects

PDET
(#19) ’03 Crude Oil Pipeline
Campinas - Rio de Janeiro
(#17) ’02 Natural Gas Pipeline

REVAP
(#23) ’06 Refinery Modernization (EPC)
(#22) ’06 Refinery Modernization (FEED Upgrading)

COMPERI
(#37) ’13 Hydrogen Unit
(#32) ’11 Utility Facilities (EPC)
(#30) ’10 Utility Facilities (Basic Design Modification)
(#27) ’10 Hydrogen Plant

Santos Basin (Pre-Salt Field)
(#36) ’13 FPSO (Topside)
(#35) ’12 FPSO (Topside)
(#33) ’12 FPSO (Topside)
(#29) ’10 FPSO (Topside)
(#28) ’10 FPSO Micro GTL (Conceptual Study)

Urucu
(#6) ’97 Gas Processing

Pilar – Carmópolis - Catu, Atalaia - Itaporanga & Aratu - Camaçari
(#20) ’04 Natural Gas Pipeline

Fortaleza - Guamaré & Recife
(#18) ’03 Natural Gas Pipeline

FAFEN-SE
(#26) ’09 Urea Vent System
(#21) ’05 Urea Granulation
(#7) ’97 Urea (Expansion)
(#3) ’76 Urea

RLAM
(#5) ’96 Refinery FCC Unit

FAFEN-BA
(#4) ’81 Petrochemical Plant
(#2) ’73 Urea
(#1) ’65 Urea

Campos Basin
(#31) ’11 FPSO (Topside)
(#12) ’00 Off Shore Project

TECAB
(#34) ’12 Gas Processing (Phase-3)
(#25) ’07 Gas Processing (Phase-2)
(#9) ’99 Gas Processing (Phase-1)
(#8) ’98 Gas Compressor Station

REDUC
(#25) ’07 Gas Processing
(#16) ’02 Delayed Coker
(#15) ’02 Gas Processing
(#11) ’00 Off Site Utility

REFAP
(#14) ’01 Refinery Modernization
(#13) ’00 Waste Water Treatment & Drainage Systems
(#10) ’99 Refinery Modernization

Port Alegre

TOYO ENGINEERING CORPORATION ©2013
TOYO in Brazil (Ongoing Projects)

- COMPERJ Utility Facility Project

  Plant: 260 MW Power & 1,000 t/hr Steam Generation
  Site: Itaborai, Rio de Janeiro
  Partner: CNO and UTC
TOYO in Brazil (Operation structure)

- Refinery/Gas/Petrochemical/Fertilizer EPC
- Power/Mining/Water Treatment Facility EPC
- FPSO Topside Module & Integration
- Own Yard for Offshore facility

On Going Project
- Cabiúnas Gas Project (Phase-3)
- COMPERJ Hydrogen Project

On Going Project
- PETROBRAS P-74 FPSO Topside Module & Integration
TOYO in Brazil (Toyo Setal On-going Projects)

- Cabiúnas Gas Project (Phase-3)
  Plant: Gas Separation Plant (195MM SCFD)
  Partner: Skanska and Promon
  Site: Macaé, Rio de Janeiro

- COMPERJ Hydrogen Project
  Plant: Hydrogen Generation Plant (125,000 Nm3/Hr x 2)
  Site: Itaborai, Rio de Janeiro

- P-74 FPSO Project (Pre-Salt Field)
  Scope: FPSO Topside Module Fabrication and Integration
  Main Yard: EBR Yard in San Jose do Norte, Rio Grande Do Sul
# TOYO in Brazil
## P-74 FPSO Project - Main Information

<table>
<thead>
<tr>
<th><strong>MAIN INFORMATION</strong></th>
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<tbody>
<tr>
<td>Project Scope</td>
</tr>
<tr>
<td>Project Management, Detailed Engineering, Procurement, Construction, Commissioning and Start-up of FPSO Topside Module Fabrication and Integration.</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
</tr>
<tr>
<td>42 months</td>
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<tr>
<td><strong>Customer</strong></td>
</tr>
<tr>
<td>Petrobras Netherland BV - PNBV</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
</tr>
<tr>
<td>150,000BOPD of Oil and 7 million Mm³/d of gas</td>
</tr>
<tr>
<td><strong>Operation Field</strong></td>
</tr>
<tr>
<td>&quot;Cessão Onerosa” – Franco Field (Pre-Salt)</td>
</tr>
<tr>
<td><strong>Hull Length (1)</strong></td>
</tr>
<tr>
<td>326 m</td>
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<tr>
<td><strong>Local Content</strong></td>
</tr>
<tr>
<td>65%</td>
</tr>
</tbody>
</table>

(1) Hull under conversion in Inhauma shipyard at Rio de Janeiro – RJ
SÃO JOSÉ DO NORTE - RS

- Population: 25,500;
- Economy: Onion planting and fishing;
- Location: 320km from Porto Alegre city and 8km from Rio Grande city by ferry.
TOYO in Brazil
EBR Yard Overview
TOYO in Brazil (Competence and strength)

- Engineering and Project Management Capability as International Contractor
- Knowledge and Knowhow based on Rich Project Experience in Brazil
- Long-term Commitment to Partner and Market through JV Company

Fusion of Capability as International Contractor and Knowhow for Projects in Brazil

*Think Global, Act Local*
Thank You!
Obrigado!