Business Opportunities for Gas Turbines Stakeholders in Latin America
• **ETM MISSION:** Provide services that add value to the entire production chain of energy and turbomachinery industries.

• **ETM VISION:** To be a company recognized for its innovation and creativity, that provide solutions to face the challenges during the transitional phase from the oil and gas era to the low carbon society.
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- 38 years of experience in oil and gas industry.
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- Member of ETN Emeritus Club
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Business Opportunities for Gas Turbines Stakeholders in Latin America
Agenda

• Latin America Energy Outlook
• Mexico Outlook
• Brazilian Economy Outlook
• Gas Turbines in Brazil & LA
• Conclusion
Latin America Outlook
Primary energy demand by selected region in the New Policies Scenario, 2040

- China
- United States
- India
- European Union
- Africa
- Middle East
- Southeast Asia
- Latin America
- Russia

Source: IEA
World proven oil reserves: 1.706 billion barrels

- Middle East: 811 billion barrels
- Latin America: 325 billion barrels
- OECD Americas: 233 billion barrels
- OECD Asia Oceania: 45 billion barrels

Oil production by region:

- Middle East
- OECD Americas
- E. Europe/Eurasia
- Latin America
- Africa
- Asia
- OECD Europe

Source: IEA
Cumulative investment in energy supply by selected region in the New Policies Scenario, 2015-2040

(a) Primary energy supply by fuel

Source: IEA
Cumulative power generation market
Orders (in GW) in FY16-18 vs. FY13-15

Source: Siemens; J.P. Morgan
Mexico’s New Energy Industry
Current expected investments

- Hydrocarbons
  - 1st Bid: 2.7 Billion USD
  - 2nd Bid: 3.1 Billion USD
  - 3rd Bid: 1.1 Billion USD

- Natural Gas Transportation
  - Pipeline network expansion: 13 Billion USD

- Power Sector
  - Generation: 24 Billion USD
  - Transmission: 4.5 Billion USD

Source: IEA
Natural Gas Exports: Outlook

Natural gas net exports
billion cubic feet per day

Source: SENER
North America Outlook

Crude oil production
million barrels per day

- United States
- Mexico
- Canada

Source: SENER

Crude oil net exports
million barrels per day

Source: SENER
Mexico Gas Turbines Market

12M15 Ordered Capacity by Geography

- USA: 19%
- China: 11%
- Egypt: 10%
- Mexico: 9%
- Iraq: 6%
- Russia: 4%
- Japan: 4%
- South Korea: 3%
- Others: 35%

Source: McCoy Data
Brazilian Economy Outlook
Brazil Outlook

- **Strong Rebound in Confidence**
- **Growth expected to turn to positive in 2017**
- **Inflation on the way to target 4.5%**
- **Gradual improvement the medium term after a strong recession.**
- **Oil Sector is continuously increasing production as investments in Pre-salt matures.**
Brazil Power Evolution

Power capacity evolution by energy source

2014
- HIDRO/HYDRO: 90 GW, 67.6%
- NUCLEAR: 2 GW, 1.5%
- UTE/ THERMAL: 20 GW, 14.8%
- BIO: 11 GW, 8.3%
- EOL/WIND: 5 GW, 3.7%
- PCH/SMALL HYDRO: 5 GW, 4.1%

2024
- NUCLEAR: 3 GW, 1.6%
- HIDRO/HYDRO: 117 GW, 56.7%
- BIO: 18 GW, 8.7%
- UTE/ THERMAL: 30 GW, 14.3%
- PCH/SMALL HYDRO: 8 GW, 3.8%
- EOL/WIND: 24 GW, 11.6%
- SOL: 7 GW, 3.3%
Petrobras Outlook

Main Metrics of Strategic Plan (SP) and Business and Management Plan (BMP)

**SAFETY**

Reduction of **36%**
In the Total Recordable Injury Frequency Rate (TRIFR*)

FROM **2.2** in 2015 TO **1.4** in 2018

* TRIFR = number of reportable injuries per million man-hours

**FINANCIAL**

Reduction in LEVERAGE
Net Debt/EBITDA

FROM **5.3** in 2015 TO **2.5** by 2018
Reduction in operating costs

- Increased share of pre-salt in the portfolio, with lower lifting costs
- Gains from contractual renegotiations
- Management of drilling rig idleness
- Optimization of support vessel logistics
- Reduction in labor costs
Production profile

Oil, NGL* and Gas production
(million boed)

2017: Oil + NGL Brazil = 2.07
2017: Natural gas Brazil = 2.52
2017: Oil + gas International = 2.62
2021: Oil + NGL Brazil = 3.41
2021: Natural gas Brazil = 3.34
2021: Oil + gas International = 3.34

* Natural Gas Liquids
What about Gas Turbines?
• Oil & Gas Sector offer better opportunities in Brazil

• Mostly in the range of 30 MW due to standardisation, emission policy and electric system constraints.

• Some opportunities in Power Gen sector still in place

• Excellent perspectives in both O&G and Power Gen in Mexico
Services opportunities

- According to J.P. Morgan, lifetime services revenue per turbine can reach 4x the original cost of the equipment, with a 30% margin.
Closing Remarks

• **Latin America does have excellent opportunities**
• **Most of the countries are experiencing a steady economic environment.**
• **Mexico Oil & Gas market deregulation offers excellent opportunities for private investment**
• **Brazilian Pre-salt deregulation is likely to unlock the oil sector.**
• **Emerging Markets remain the primary growth opportunity for power generation.**
• **Gas turbine service is a substantial profit driver**
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Thank you!