

# WTO Workshop on Environmental Goods and Services

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imagination at work

# Diverse technologies ... to meet any outcome



**Gas**



**Wind**



**Nuclear**



**Solar**



**Smart Grid**



**Biomass**



**Pipeline  
Integrity**



**Water  
Technologies**



**Cleaner Coal**



**Oil & Gas**

# Jenbacher Gas Engines

## A leading manufacturer of gas-fueled reciprocating engines for power generation

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- Power range from 0.25MW to 4MW, 4 platforms / 10 products
- Fuel flexibility: Natural gas or a variety of renewable or alternative gases (e.g., landfill gas, biogas, coal mine gas)
- Plant configurations: Generator sets, cogeneration systems, container solutions
- Installed base: More than 8,000 units / 9,000 MW

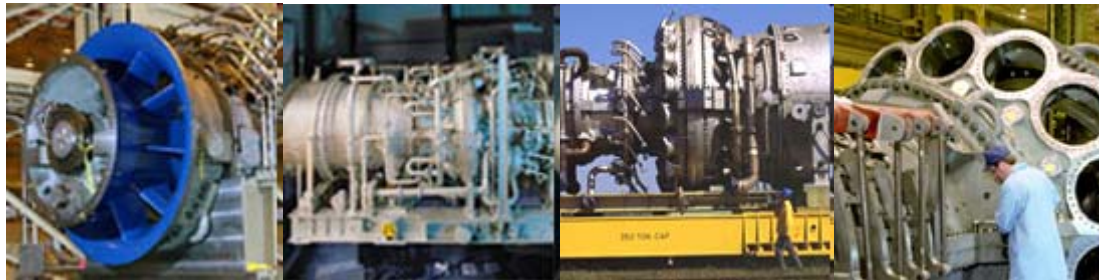


# High Performance Gas Turbines

## Efficient heavy duty and combined cycle gas turbines can meet challenging energy needs

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- Power range from 26 to 480 MW
- Flexible Usability: Power generation, cogeneration, district heating and a variety of industrial applications
- Efficient products can for the first time exceed the 60% efficiency barrier, reducing natural gas consumption
- Installed base: More than 6,000 units / 200 million hours



# IGCC - Gasification

- Pioneered by GE 30 years ago
- Transforms cheap and plentiful coal into electricity with lower emissions than a traditional coal burning plant
- Protects against volatile natural gas prices

## Imperatives for cleaner coal success

### Reference plant commercialization

- Duke Edwardsport - Site work and detail design underway

### Carbon solution

- Carbon policy
- Total carbon solution ... Schlumberger CCS alliance

### Next generation technology

- Powder River Basin
- Advanced gasification technology center



# Smart Grid

The marriage of IT with our electrical infrastructure to support our 21<sup>st</sup> Century energy needs

- Resource **efficiency** ... supports high penetration of wind, distributed solar and Combined Heat & Power (CHP)
- Energy **efficiency** ... advanced controls to reduce transmission & distribution losses
- Consumer **efficiency** ... enables consumers to manage energy usage and costs
- Asset **efficiency** ... monitoring to fully utilize and extend life of existing assets
- Operating **efficiency** ... remote monitoring & control to improve reliability and resource utilization



# Renewable Energy

## Wind & Wind Services

- Leading N. American wind turbine supplier
- 6x unit growth since '02
- 12,000+ 1.5MW installed globally



## Solar

- Residential, commercial and utility applications
- Largest commercial solar project in Asia
- PrimeStar Solar thin film technology investment

## Biogas

- Power range: 0.25 MW-4 MW
- Fuel flexibility: Natural gas or a variety of renewable or alternative gases

- 10 manufacturing/assembly sites
- 4,000 global employees
- Installed base: 14GW
- Projects in 40+ countries
- 10,000 sub-supplier jobs created

# ESG Barriers

## Many countries still impose tariffs on EGS

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- Of the 153 WTO member nations:
  - Nearly 60% impose a mean tariff of 7.4% on wind turbines
  - Nearly 43% impose a mean tariff of 8.8% on solar panels
- The table below illustrates that many nations are still levying tariffs on carbon-reducing energy technologies

<u>Wind Turbine Tariffs</u>		<u>Solar Panel Tariffs</u>	
Mexico	10.0%	Russia	20.0%
China	8.0%	India	15.0%
S. Korea	8.0%	U.A.E.	5.0%
India	7.5%	Columbia	5.0%
Russia	5.0%	Brazil	3.8%
U.A.E.	5.0%		
E.U.	2.7%		
U.S.	1.3%		



# Renewable Tech Trade Implications

## **ESG Trade can stimulate the world economy while helping nations achieve their carbon reduction goals**

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- An Environmental Services and Goods Agreement (EGSA) will help reduce the cost spread between fossil fuel energy and renewables/green technologies
- Many WTO countries currently employ an inefficient mix of tariffs and non-tariff barriers on renewable technologies
- The DDA remains critical, but the current lack of momentum for it should not halt ESGA trade liberalization that will spur innovation and create incentives for carbon reduction
- Serious discussions about the potential of creating a separate ESGA should commence