Presentation on
Radhe’s Advanced Gasification Technologies

At
GASIFICATION INDIA-2017 – New Delhi

Dawn of Clean Energy

Developed & Presented by
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Mr. M S Javia

Radhe Renewable Energy Development Pvt. Ltd.
Rajkot - Gujarat

DSIR approved R&D Center
Radhe @ Glance

Founded by: Dr. Shailesh Makadia

Year of Inception: 1991

Core Focus: Renewable Energy mainly focus on BIOMSS
• Biomass / Coal Gasifiers
• Biomass Briquetting Plants
• Hot Air Generators
• Waste Heat Recovery System
• Corporate Farming & Energy Plantation
• Biofuel / Biodiesel from Biomass
• Waste Hydrocarbon Recycling – Resurgent Energy

Diversified Portfolio Includes: Food Products, Castings, Packaging, Media, Real Estate & Infrastructure, Mining & Minerals, Import-Export, Herbal

Key to Success: Backward and Forward Vertical Integration

Group Turnover: US$ 50 Million

Our Assets: Approx. 1500 Employees

www.radhegroup.com
Our Mission & Vision

- To encourage and promote the Non-Conventional and Renewable Energy Resources.

- To bring Green Revolution by making society self-sufficient with renewable and sustainable energy by replacing fossil fuel, thus leading to cleaner environment for the next generation.

- To make giant global presence with our capabilities, creativity & resources in diversified business sectors.

- To utilise waste-land for Bio-mass cultivation.

- To create employment round the year.
Our Strength

- Over 2 Decades of Business Experience
- Diversified Business Model
- Huge Industrial, Commercial and Agricultural Land Reserves
- Strong Project Execution Capability
- Government of India Approved In-house R&D Center
- Strong Financial Performance
- Long Term Growth Strategies
- Young, Dynamic and Passionate Professionals
- Recognised Leader in Biomass Energy

www.radhegroup.com
Radhe Renewable Energy Dev. Pvt. Ltd.

www.radhegreenenergy.com

Sector : Renewable Energy

Biomass / Coal Gasifiers
Replace any liquid fuels for thermal applications up to 1200°C and also for power generation.

Electrostatic Precipitator
Ultra modern and efficient gas cleaning device

Fluidized Bed Hot Air Generator (Direct)
For drying application in various process industries

Biomass based Power Plant
500 Kw to 3Mw Capacity
Our Unique Position in India

- **Radhe** stands apart with 65% of total installation of Gasification Technology from the rest in India, as per the survey by Karnataka State Council of Science & Technology and Submitted to DSIR (Department of Science and Industrial Research)
Concept to our Existing Coal Gasifier
Cold Gas Cleaning System to Hot Gas Cleaning System

Updraft Gasifier

Hot Coal Gas 300-450°C

Gas Cleaning Root

Condenser-1 Indirect Gas Cooling

Waste Water Generation

Waste Water Collection Tank

TAR Collection Tank

ESP

Condenser-2 Indirect Gas Cooling

Waste Water Generation

Cool Clean Gas to the Process 35°C

Newly Developed Hot Gas Filtration System

Hot Gas Cleaning Root

Hot Coal Gas 300-450°C

Hot Gas Settling Chamber

Hot Gas Filtration System (Ceramic Media)

Hot Clean Gas 275-400°C To the Process

(No Tar & No Waste Water Generation due to Hot Gas)

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About Cold Gas Cleaning System

- To Utilize Clean and cold Gas
- Tar is being Removed In ESP (Electrostatic Precipitator).
- Moisture present in producer gas is being removed in both condensers.
- Waste Water is disposed by Evaporator.
- Tar is utilized as a Fuel in Sodium Silicate and Cement industries having energy around 7500 Kcal/Kg.
- Outlet Temperature of Gas up to 35-40°C
- This Technology Operates by Fully Automatic With SCADA & Based On Pressure Drop
About Hot Gas Filtration & Hot Gas Cleaning Technology

- Aim to Utilize Direct Clean and Hot Gas
- Tar is Remain In to gaseous Form & Utilize in Furnace as a Fuel With Coal Gas
- Outlet Temperature of Gas up to 300-450°C
- Utilization of Ceramic Filter Media for Cleaning of Hot Gas Which Can Re- generate & Re utilize Easily
- Hot Filtration Technology Operates Fully Automatic With SCADA & Based On Pressure Drop
Process Diagram of Hot Gas Filtration & Cleaning Gasification Technology

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Coal/Biomass

Existing Updraft Gasifier

Steam & Gasification Air

Steam Jacket

FD Fan Gasification Air

Drying 200°C

Pyrolysis 400°C

Reduction 800°C

Combustion 1100°C

Hot Coal Gas 300-450°C

TAR escape from Steam Jacket

Gasification Air

Steam

Gasifier

Clean Hot gas 275-400°C

Outlet towards Application

Collection & Supplied For Regeneration

Collection Hopper

Ceramic Filter Media

Recharge to Collection Hopper

R.A.V.

R.A.V.

Heavy Particle Separation Settling

Water Seal For Safety

Regeneration System

Very fine coal Particles

Click Here for Animation Video
# Technology Comparison

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Feature</th>
<th>Cold gas Cleaning Gasification Technology</th>
<th>Hot Gas Filtration and Cleaning System Gasification Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Gas Cleaning Equipments</td>
<td>ESP, Condenser Pump Cooling Tower West Water Storage &amp; Tar Tanks</td>
<td>Only Hot gas Filtration System</td>
</tr>
<tr>
<td>2.</td>
<td>TAR &amp; Waste Water Generation</td>
<td>Yes</td>
<td>NO</td>
</tr>
<tr>
<td>3.</td>
<td>Coal consumption</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>4.</td>
<td>Power consumption</td>
<td>Higher</td>
<td>Lower</td>
</tr>
<tr>
<td>5.</td>
<td>Efficiency</td>
<td>Lower</td>
<td>Higher</td>
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Potential indirect benefit to the country and environment with Advanced Gasification Technologies

- Potential to compete with international market and boost export of India

- Potential to saving of Huge Natural Resources.

- Environment friendly technologies reduce pollution.

- Potential reduction of Huge GHG Emission.

- To encourage and promote the Non- Conventional and Renewable Energy Resources.
Our sincere thanks to …..

Late Prof. N. S. Varandani Sir
(Ex- L D Engineering College & GERMI)

&

Prof. P D Grover Sir
(Ex-IIT New Delhi)

For their inspiration & technical guidance to developed Advanced Gasification Technologies
Thank You
Looking Forward to the Sustainable growth