



# **SYNFUELS AMERICAS**

A SYNFUELS CHINA TECHNOLOGY COMPANY

## **BENEFITS OF COGENERATION AND CHEMICAL USE OF COAL**

14TH SESSION OF THE GROUP OF EXPERTS ON CLEANER ELECTRICITY  
PRODUCTION FROM FOSSIL FUELS

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# Cogeneration Equals Fuel Savings

10 – 20% fuel savings compared to separate generation of heat and power

Combined cycle achieves > 60% electrical efficiency

Without combined cycle, < 50% electrical efficiency



# Condensing Turbines and Energy Efficiency Maximization

Driven by increasing use of renewable energy sources

Decoupling power supply from heat supply is increasingly important



# Renewable Energy: Changing the Business Model

Wind and solar are pushing fossil-fuel power generation out of the base-load market

Cogen plants transition from continuous full-load operation to low partial-load segments

Operational flexibility is important



# Thermal Energy Storage Systems Advancement

Emphasizes importance of separating power supply from heat supply

Timelkam Combined Cycle Power Plant converted into an atmospheric hot water storage tank

Increases plant flexibility



# Modeling for Cogen Plant Optimization

Energy companies can model the entire power plant fleet and all supply lines

Based on a market-economy approach

Some tools achieve 90% accuracy



# Fortuna: The Most Efficient Cogen Plant in the World



Record 62.5% electrical efficiency

Triple-pressure Benson<sup>®</sup> heat-recovery steam generator

85% overall fuel efficiency

Optimized startup and shutdown





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# Coal: A Factor of Chemical Production

Creosote oil

Naphthalene

Phenol

Benzene





# Coal: Essential to Specialist Product Manufacturing

Steel

Activated Carbon

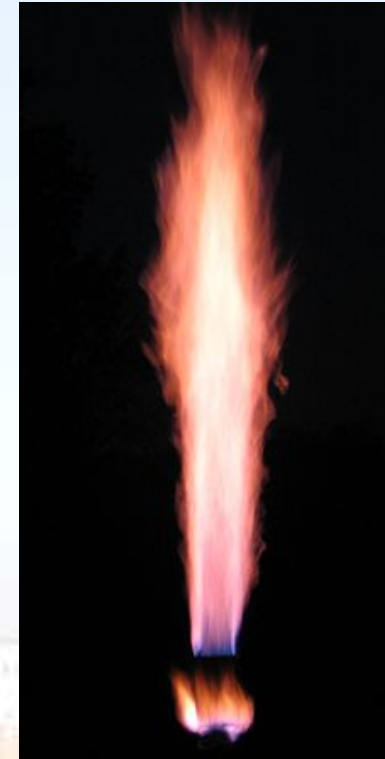


# Coal: A Precursor for Syngas

Methanol

Hydrogen gas

Carbon monoxide



# Coal-to-chemicals: A Positive Future

Rapid development

Oil prices increase



# LNG: Driver of Global Clean Energy Consumption

Asia

Europe



# Positive Regulatory Environment

Regulations that fit the circumstances

Not the right answer

**THE BEST ANSWER**

Does Cogeneration/CHE fit this?

In some instances

