

Outsourcing

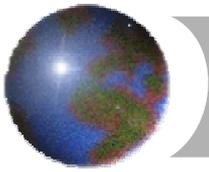
Is it right for you?

Texas Technology Showcase
Houston, Texas
March 18, 2003



*Integrated
Process
Solutions*

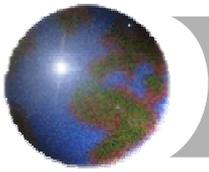
“Specializing in Operational Excellence”



Supply Side Outsourcing

Outsourcing utilities will provide the following to industrial customers:

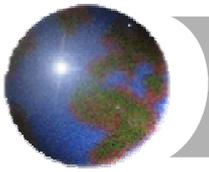
- Free up capital, inventories, and human resources
- Focus on core business
- Lower Costs
- Improves Infrastructure



Supply Side Outsourcing

Outsourcing has three defined steps for companies to manage:

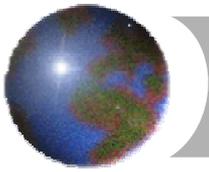
Defining & Evaluation Stage  Contract Negotiations  Execution



Supply Side Outsourcing

A supply side evaluation takes into consideration the following items:

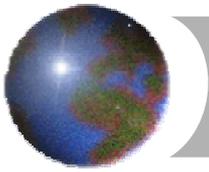
- Due Diligence
- Current Costs
- Integration Plan
- Future Costs



Supply Side Evaluation

A supply side evaluation takes into consideration the following items:

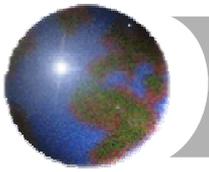
- Energy Contracts
- Utility Contracts
- Power Market Assessment
- Future Costs After Deregulation



Supply Side Evaluation

Process and Utility Evaluation

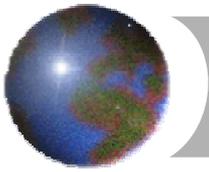
- Determine the opportunities to improve the work potential and reduce waste from the process
- Identify opportunities through an audit
- Integrate process and utilities systems



Supply Side Evaluation

Develop a plan that makes sense,
determine options:

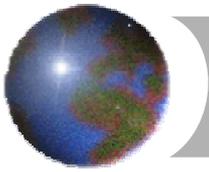
- Equipment Leasing
- Cogeneration
- Third Party Outsourcing



Supply Side Outsourcing

When to Outsource

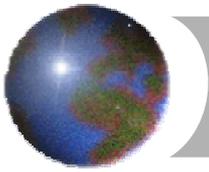
- Economic Decision
- Equipment is at end of useful life
- Infrastructure Capacity Increase
- Access to “Free Fuel”
- Cost Improvements



Supply Side Outsourcing

When not to Outsource:

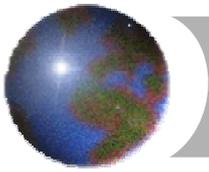
- Economics risks are marginal (cogen needs to work at \$5.00 gas)
- Host company is risk adverse
- Host company has resources
- Host company has high skill levels
- Host company needs control over utilities



Who to Outsource to

Companies that:

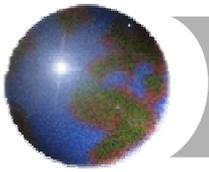
- Share the same vision
- Are experienced with industrial customers
- Are experienced with “inside the fence” projects
- Can develop a site specific strategy to meet needs
- Can bring all the resource requirements to the table
- Understand gas and power markets
- Are flexible to meet host needs



Supply Side Outsourcing

Contract Components

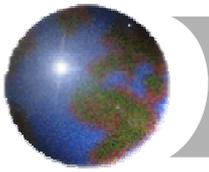
- Lease
- O&M Agreement
- Back-up and Supplemental Power
- Fuel



Outsourcing Contracts

Overall Structure

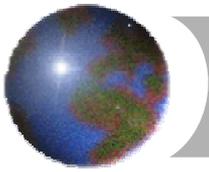
- Allow outsourcing company to make their money on leasing the equipment not on energy sales to host
- Make gas a “pass through” cost for host
- Avoid “take or pay” contracts
- Allow for dispatching power generation equipment when it makes sense
- Place all the savings on power costs for cogen



Outsourcing Contracts (cont.)

Equipment Leasing

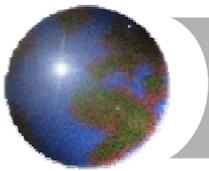
- Willing to accept a 10% to 15% ROA
- Lease over 10 to 20 years
- Host has right of first refusal on sale of lease
- Negotiate annual buy out for lease
- Involve Independent Accounting Auditors early to make lease “balance sheet neutral”



Outsourcing Contracts (cont.)

O&M Contracts

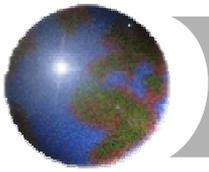
- Willing to separate Lease from O&M
- Operating Agreements for 5 years with renewable option
- In some cases operations can be executed by host
- Maintenance Agreements “bumper to bumper” warrantee on normal wear and tear.
- Operating company bears risk on extraordinary damages



Outsourcing Contracts (cont.)

Contract Penalties

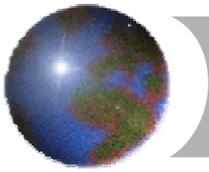
- Negotiate performance on steam time and efficiency guarantee
- Clarify costs on back-up power and steam (how much and who pays)
- Outsourcing company must be willing to accept operational penalties for process equipment damages



Outsourcing Contracts (cont.)

Gas and Power Strategy

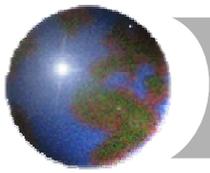
- Evaluate gas bypass and alternate transportation costs
- Gas management and hedging capability
- Power and gas arbitrage models
- Host must stay involved in gas and power decisions



Outsourcing Contracts (cont.)

Common Contract Mistakes

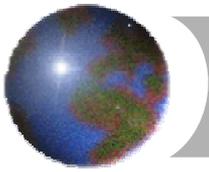
- Lease does not meet independent auditors requirements
- Back-up power requirement costs are not clearly defined
- Capital costs can be under/over stated
- Gas hedging strategy not defined at signing
- Defining risks for parties
- Defining a fair exit strategy



Small Cogen Costs

Typical Small Cogen Costs (< 25 MW)

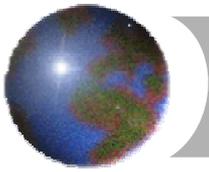
	\$/kWh
▪ Lease	\$.022
▪ Maintenance	\$.005
▪ Gas Costs	\$.022
▪ Back-up Power	<u>\$.005</u>
Total	\$.054



Small Cogen Costs (cont.)

Assumptions:

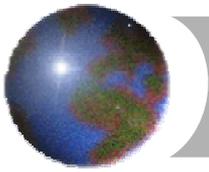
- 20 yr. lease, new equipment, 15% ROA
- Capital costs of \$1050/kW
- 95% OST for full capacity
- No labor savings
- Maintenance costs include G&A



Small Cogen Costs (cont.)

Assumptions:

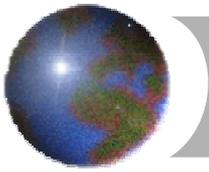
- Gas costs of \$4.00/MMBtu
- Boiler House Efficiency at 75% (includes steam to D.A)
- Savings from steam applied to power
- Back-up power from grid includes 5% energy charge when cogen is down



Small Cogen Costs (cont.)

Lowering Cogen Costs

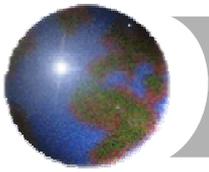
- Finding equipment in secondary market (new and used)
- Solid gas hedging strategy
- Solid power arbitrage model (make or buy power)
- Fueling environmental friendly co-products
- Assuming reasonable back-up power risks
- Lowering utility area head count



Outsourcing Economics

Savings are based on alternatives for future:

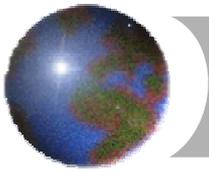
- Power
- Steam
- Replacing Equipment (Avoided Capital)
- Other Utilities (water, nitrogen, compressed air, cooling water, firewater, refrigeration)



Outsourcing Economics

Cogen works best in:

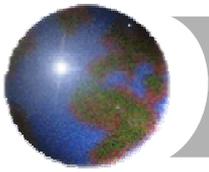
- High priced power markets
- Markets dominated by gas power production
- Utility markets that have lower back-up costs



Outsourcing Economics

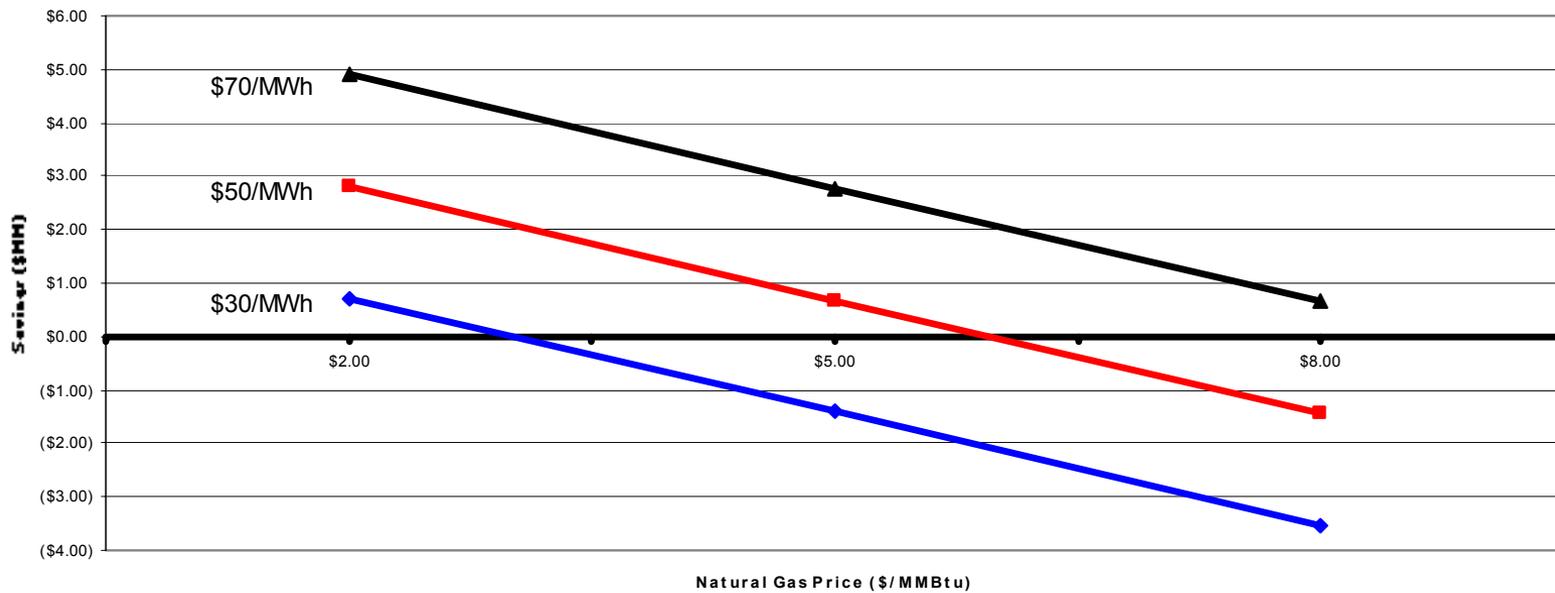
Host Company needs to understand gas-power relationships:

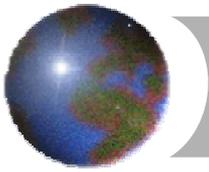
- Sensitivity analysis
- Break-even analysis
- Good financial model
- Local utility issues



Outsourcing Economics

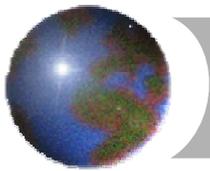
Figure 1
15 MW Turbine
Co-Gen Sensitivity Analysis





Outsourcing-Where to begin

- Begin with an Audit
- Develop a strategy
- Define objectives
- Focus on the core assets/systems
- Invite Outsourcing companies to bid
- Allow Outsourcing companies to be creative
- Evaluate Outsourcing Companies
- Find the right fit for your company



Outsourcing Participants



Enzyme Bio-Systems Ltd.

