

SIEMENS

Industrial Solutions and Services

Saudi Arabian Water Environment Association

Water Treatment Outsourcing

Siemens Water Technologies

June 7, 2006

- ◆ **Equipment Purchase vs. Outsourced Water Treatment**
 - ◆ What you're buying
 - ◆ The procurement process
 - ◆ What you're getting

- ◆ **Qualifying an Outsourced Operations provider**
 - ◆ Fundamentals: Financial and EH&S
 - ◆ Evaluate the People
 - ◆ Verify the Infrastructure to support the operations
 - ◆ Confirm the management systems are in place
 - ◆ Agree on a structured communications plan

What You're Buying

Traditional Equipment Procurement

- Equipment (Hardware)

Outsourced Water Treatment

- Treated water

The Procurement Process

Traditional Equipment Procurement

- Develop performance specifications
- Contract engineers for process design
- Contract engineers for detail design
- Prepare specifications and RFP
- Identify qualified bidders
- Evaluate proposals on technical merit
- Evaluate proposals on economics
- Award the project
- Manage the equipment procurement
- Manage the construction
- Manage conflicts between engineers, equipment suppliers and constructors.
- Commission the system
- Start up the system

Outsourced Water Treatment

- Develop performance specs & RFP
- Identify qualified bidders
- Evaluate proposals on economics
- Award the project
- Coordinate/monitor supplier

What You're Getting

Traditional Equipment Procurement

- **Equipment**
- **Materials & workmanship for warranty period**
- **Process assurance for certification period**

- **Responsibility for**
 - **Operations**
 - **Maintenance**
 - **Consumables**
 - **Spare parts management**
 - **Long-term performance**
 - **Operating economics**

Outsourced Water Treatment

- **Treated Water**
- **Quality and quantity as specified**
- **Process assurance for the life of the contract**
- **System designed for minimum life-cycle cost**
- **Economic assurance for the life of the contract**
- **System reliability**
- **Regular updates on the system's performance**

- **Opportunity to focus your management and manpower on your core business**

Equipment Purchase vs. Outsourced Water Treatment

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Outsourced Water Treatment

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Contracted Labor vs. Outsourced Operations

◆ Contracted Labor

- ◆ Essentially just a hiring & payroll service
- ◆ Owner still carries most of the responsibilities for operations

◆ Outsourced Operations

- ◆ Staff includes managers, skilled operators, specialists, and technical support.
- ◆ Supplier has infrastructure to manage, support, and optimize operations
- ◆ Supplier carries the responsibility for system performance and reliability

Choosing a Partner for Outsourced Operations

The Fundamentals are Important

◆ Financial Strength and Stability

- ◆ Many outsourced contracts require significant capital investment at the start of a contract and periodically thereafter
- ◆ Some good contracts may not be profitable initially



◆ Environmental, Health, and Safety

- ◆ Strong corporate EH&S culture
- ◆ Well-developed management and training programs specific to water treatment
- ◆ Proven experience in operating safely



Choosing a Partner for Outsourced Operations

The People are Critical

- ◆ **Operations Manager**
 - ◆ Experienced in setting up and operating an outsourced operation
 - ◆ Proven ability to reliably achieve the system performance objectives and communicate effectively with the owner.
- ◆ **Technicians and Operators**
 - ◆ Skilled in the trades required
 - ◆ Trained, tested, and certified to perform the specific maintenance activities
- ◆ **Specialists to support the operations**
 - ◆ Materials procurement
 - ◆ Chemical analysis
 - ◆ PLC programming
- ◆ **Strong Technical Resources**
 - ◆ Extensive experience in the design and application of the technologies employed



Choosing a Partner for Outsourced Operations

Solid service infrastructure is the foundation for success

- ◆ **Library of Ops/Maintenance procedures**
 - ◆ Ensures consistent execution of all tasks
 - ◆ Forms the basis for Technician training
- ◆ **Preventive Maintenance program**
 - ◆ Integrated with SOP library
 - ◆ Tracks maintenance tasks to completion and preserves maintenance history
 - ◆ Integrates preventive and predictive maintenance
- ◆ **Operator/Technician Training Program**
 - ◆ Includes EH&S, Technical, and Administrative
 - ◆ Written tests certify levels of competence
 - ◆ Ensures work is performed only by qualified technicians



Choosing a Partner for Outsourced Operations

Planning and evaluation of risks ensure reliability

- ◆ **Inventory of Spares and Consumables**
 - ◆ Network of local, regional, and global distribution centers to balance costs and availability.
 - ◆ Forward-looking inventory systems to avoid interruptions.

- ◆ **Failure Mode Effects Analysis**
 - ◆ A “Hazop” analysis for system reliability
 - ◆ Identifies operating reliability risks related to system design, equipment redundancy, component failure, operator error, and spares/consumables supply chain.
 - ◆ Enables operator to eliminate risks before they cause downtime.



Choosing a Partner for Outsourced Operations

Management systems to ensure performance objectives are met

- ◆ **Collection and Analysis of operating data**
 - ◆ Reviewed and analyzed by global technology experts
 - ◆ Allows optimization of system
 - ◆ Provides advance notification of developing problems

- ◆ **Non-Conformance Reporting**
 - ◆ All out-of-spec conditions
 - ◆ Unplanned downtime
 - ◆ Overdue PM tasks
 - ◆ Ensures visibility and corrective action

- ◆ **Management of Change Process**
 - ◆ Review of all proposed changes to the system or operating procedures
 - ◆ Includes review by technology experts
 - ◆ Eliminates unanticipated secondary effects of changes and undesirable evolution.



Choosing a Partner for Outsourced Operation

Structured communications are reliable and efficient

- ◆ **Communications for Operations**
 - ◆ **Continuous updates to PM system**
 - ◆ **Daily Operations logs**
 - ◆ **Daily EH&S logs**
 - ◆ **Formal “Passtown” at each shift change**

- ◆ **Communications for the Owner**
 - ◆ **Monthly or Quarterly Account Management Review**
 - ◆ **Summary of operating data**
 - ◆ **Review of any NCRs**
 - ◆ **Budget review**
 - ◆ **Future plans**
 - ◆ **Ensures full visibility to operations performance**
 - ◆ **Ensures regular communications between management on both sides**

Outsourcing Example: Petroleum Refinery

The Challenge:

- ◆ Old and Inefficient Water Treatment Systems
- ◆ Numerous projects competing for limited capital
- ◆ Management stretched thin

The Solution: Build-Own-Operate (BOO)

- ◆ A 15-year contract to sell WATER to the refinery
- ◆ Outsourced Operator provides:
 - ◆ New treatment system incorporating modern technologies
 - ◆ Operators, maintenance technicians, management
 - ◆ Technical support to Production
- ◆ Refinery gets a more efficient and reliable water system
- ◆ No additional manpower
- ◆ Reduced management involvement
- ◆ Refinery capital can be spent on production improvements rather than water treatment.

Outsourcing Example: Large Microelectronics Manufacturer

The Challenge:

- ◆ **Multiple manufacturing sites**
- ◆ **New process and regulatory requirements requires new wastewater treatment technology**
- ◆ **Limited manpower available to learn new technology operations**
- ◆ **Internal manpower very expensive**

The Solution: Outsourced operations for the new systems

- ◆ **Technicians provided and trained by technology provider**
- ◆ **Supervisor is in close contact with design engineers**
- ◆ **No transition between Start-up and Operations**
- ◆ **System improvements are immediately implemented across all installations**
- ◆ **The owner has no expense for hiring and training, and has no increase in manpower.**

Outsourcing Example: Distributed Small Sanitary Waste Treatment Systems

The Challenge:

- ◆ **Multiple treatment locations distributed geographically**
- ◆ **Manpower requirement at each location is less than a full-time operator**
- ◆ **No local staff qualified to operate the plants**

The Solution: Outsourced operations

- ◆ **System operations are monitored centrally**
- ◆ **Operators travel to the sites on scheduled route, and**
- ◆ **Technicians are dispatched to the site when problem is identified by remote monitoring**
- ◆ **Cost is minimized by providing other service for multiple customers on the same route.**
- ◆ **Owner gets full coverage without under-utilized labor**

Questions ?



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