e n n o v a t i o n.
The **POWER** of Environmental Data Management

Environmental Data Management, Analysis, and Compliance Systems - Rethinking the Creation and Use of Emissions Data by the Regulated Community

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Environmental Data

- Traditional view that collection of environmental data is the cost of doing business
- Businesses are moving towards view that environmental data are part of the business model:
  - economic
  - societal
  - environmental

Evolving View of Environmental Data

- – Increased Costs of Regulatory Non-Compliance
- – Better Real-time Data Acquisition & Analysis Tools
- – Leveraging Enterprise and ERP Systems
- – Introduction of Market Trading Systems
- – Responsible Corporate Citizenship
- – Availability of Enterprise Environmental DBMS
- – Corporate Merger and Acquisition Hyperactivity

Determining Environmental Data Value

- Comparing current costs with costs after implementing an environmental data management system.
- Estimating costs that are avoided or minimized when accomplished under a different paradigm
- Estimating and quantifying benefits to be realized by using compulsory data gathered at a local level to generate information for decision making at a global level.

What is an Environmental ROI?

The standard Return on Investment (ROI) is:

$$ROI = (Return - Cost)/Cost$$

It's all about the bottom line…

– The practical difficulty of calculating ROI is quantifying each variable. How would one factor in such variables as:
  – technological innovation
  – competitive edge gained through minimizing pollution and maximizing process efficiency
  – customer loyalty by being a good environmental corporate citizen
– USEPA & Others are developing ROI methods
  – Quantifiable models for business concepts
– Critical purpose is how to increase ROI

The ROI Over Time...

- One approach is to use net present value:
  - Calculate future savings in terms of current dollars and map that to investment costs
- Another approach is to use internal rate of return:
  - Focus exclusively on future cash flows derived from an asset or investment

Extending the Environmental ROI…

– The ROI can be extended to calculate the benefit of environmental data management, analysis and compliance software:

ROI = (Saving – Derived Income)/Investment

- Savings through optimized engineering processes
- Derived income calculated from improved processes
- Cost of creating the savings

Extending the Environmental ROI...

– Key Factors to consider
  – Cost
    – Calculating the cost of the environmental data management, analysis and compliance software is the first place to start. Additional costs are equipment upgrades / replacements
  – Deployment Timing
    – Time to deployment will directly impact internal business efficiencies, either by disrupting them, or by delaying the availability of a new service
  – Environmental Data History

Extending the Environmental ROI…

– Key Factors to consider (cont.)

– Environmental Data History

– Should measure improvement against a past condition. If there is no prior history, then one should measure changes in the condition after the system is installed and operational.

Maximize Environmental Data Management ROI ...

- There are two key purposes for which an environmental ROI can be used:
  - Evaluate environmental data management, analysis and compliance systems to identify the cost benefits of implementation
  - Use the environmental ROI to manage the environmental data as a corporate asset to contribute to the success of the company
    - Maximizing the environmental ROI can contribute, sometimes significantly, to the bottom line of a company

Environmental Data Management Analysis, Compliance System

– Based upon maximizing an environmental ROI, an EDMACS should have:

  – Event Tracking Module > must have flexible, industrial strength scheduling and tracking
  – Interface with Corporate Systems > must produce benefits company wide
  – Real Time Data Acquisition > compare conditions with measurements real time
  – Maintenance & Leak Detection > equipment is running optimally if pollution is minimized
  – Maintain Extensive History Information for Record Keeping and Analysis > to increase ROI one needs to know pollution history

Commercial Environmental Data Management Systems

– Compliance Centric Systems
  – Focus on meeting regulatory requirements
  – Many systems available
– Environmental ROI-Centric Systems
  – Assist with maximizing ROI while meeting the obligations of compliance and regulatory activities
  – Minimize ongoing system costs
  – Environmental objectives are incorporated into the business plan

Ennovation Suite

– Environmental ROI-Centric System
  – Oracle-based system, PowerBuilder front end
  – Two-tier or Three-tier topology
  – Provides facility compliance functionality:
    • Emission Inventory – air, waste & storm water, waste streams
    • Facility Management – facility & process information for all facilities
    • Compliance & Permits – maintain conditions and measurements, regulatory requirements
    • Data Exchange Interface – interface with other databases, systems
    • Laboratory Information Management System Interface
    • Environmental Data Acquisition – interface with real time data loggers

Ennovation Suite

– Key ROI Centric components are:

- Environmental Data Repository > extensive use of flexible attributes to add new information
- Scheduling and Event Tracking > fully customizable automated event scheduling and tracking
- Analysis and Reporting System >facilitates comparison and analysis of environmental data using statistical methods, e.g., Monte Carlo, iterative models, maximum likelihood estimates, risk assessment, ROI calculations
- ERP Interface > data exchange with Enterprise Resource Planning software