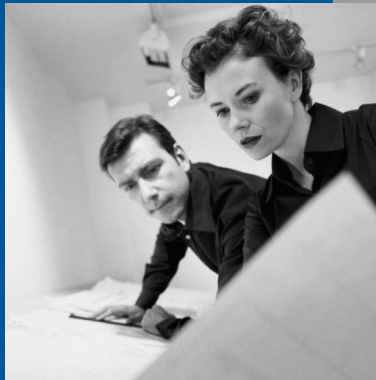


SAP for Utilities



SAP® xApp™ EMISSIONS MANAGEMENT

**TURNING COMPLIANCE INTO A BUSINESS
OPPORTUNITY**

The SAP® xApp™ Emissions Management packaged composite application helps utilities comply with energy-consumption and greenhouse gas regulations, which have a high financial impact on entities that consume energy and produce carbon dioxide. Leveraging the functionality of the SAP for Utilities set of solutions, the application offers utilities an opportunity to improve plant operations, reduce costs, make better-informed risk-management decisions – and improve the environment.

THE ENVIRONMENTAL CHALLENGE

Regulations such as the Clean Air Act and the Kyoto Protocol require emissions-producing entities in the United States, Europe, and elsewhere to reduce energy consumption and greenhouse gas emissions. To meet specific goals, emissions trading markets are being developed in which organizations that meet targeted emissions levels earn credits that can then be traded, stock-market style, to organizations that didn't meet them. Estimated by Point Carbon at \$10 billion per year, this emerging trading market is potentially very substantial. According to the EU Directive on Emissions Trading, entities required to participate in the program include combustion installations with outputs of more than 20 MW, mineral-oil refineries, coke ovens, and other energy-intensive branches of trade.

Because power generators are responsible for a majority of the emissions output in many regions of the world, these emissions regulations will have a tremendous impact on how utilities manage operations, calculate risk, and plan for the future. Take, for example, the risks involved in making decisions about new production facilities. Although traditional coal plants may be less expensive to build, gas and steam cogeneration plants may be the wave of the future. Regulatory disincentives may make these plants less expensive in the long run because they emit less carbon dioxide (CO₂).

Utilities also face considerable risk when it comes to calculating the future cost of emissions rights. Although initial allowances are free, additional rights must be obtained on emissions trading markets – and these rights may be necessary to keep utilities in compliance. With future prices almost certain to fluctuate, utilities have little information about their marginal costs and even less basis on which to make strategic decisions. And there

are sure to be modifications to the trading system as time goes on. What will be done about the fact that different countries use different pricing structures? How will regulatory authorities define conversion factors to determine the exchange relationship between substances? Will utilities be allowed to hoard licenses? Will there be limits on the free exchange of licenses? If so, will this reduce the attractiveness of emissions trading markets? This kind of uncertainty only augments the complexity – and the risk – facing utilities.

On the flip side, the regulations present tremendous opportunities. Because, historically, utilities are on the forefront of emissions reduction initiatives, they will be ahead of other industries when it comes to achieving desired emissions levels. Moreover, many utilities have already gained experience with energy trading markets, so they will have a shorter learning curve when emissions trading markets go live on January 1, 2005. They can leverage this advantage to generate new revenue streams that have a positive impact on the bottom line.

To succeed in this regulated environment, however, utilities – yours, for example – need a cost-effective way of monitoring and controlling emissions output, tracking compliance, and generating reports. This is where the SAP® xApp™ Emissions Management (SAP xEM) packaged composite application can help.

THE EMISSIONS MANAGEMENT SOLUTION

To manage plant emissions successfully, you must be able to easily access and use applications and data from the systems that run your power-generation facilities. SAP xEM helps overcome access barriers by delivering a highly functional integrated solution that's based on the SAP NetWeaver™ platform – the same platform your SAP for Utilities set of solutions is based on.

SAP xEM belongs to a new breed of composite applications. It is designed to improve productivity by aligning compliance software with existing processes. Capabilities such as maintaining compliance status, monitoring and controlling plant emissions, tracking performance benchmarks, and communicating with key stakeholders make this solution unique. It supports processes

that enhance the information flow across the organization, improve environmental portfolio management, and enable you to move closer to achieving sustainability for your global operations.

WHAT THE SOLUTION CAN DO FOR YOU

SAP xEM delivers the capabilities needed by any utility faced with regulatory compliance and emissions management challenges. These capabilities include:

- **Emissions estimation and analysis**, supported by scenarios, calculations, and presentation of emissions data
- **Compliance management** with task supervision, schedules, defined information flows (workflow and roles), and procedures and rules
- **Compliance reporting** via automated report generation and delivery
- **Emissions trading and collaboration**, including forecasting and transaction support
- **Management support** for controlling, planning, risk management, material balancing, and administrative processes
- **Ancillary functions** such as incident management, accidental release, fugitive emissions, modeling, and forecasting

SIMPLIFY YOUR PROCESSES WHILE KEEPING THEM IN COMPLIANCE

SAP xEM provides the functionality you need to meet – and take advantage of – new emissions regulations. It covers emissions modeling and analysis, compliance management, reporting and documentation, trading and collaborative management.

Emissions Modeling and Analysis

Emissions regulations require detailed descriptions of the plants, facilities, and processes causing emissions. These descriptions, which differ depending on the type of emission and legal requirements involved, often are required before you can open a new facility or start a new process. SAP xEM simplifies the descriptive process, which can include the following categories:

- Name, type, and size of emission sources and processes
- Description of the emissions, sources, amounts, and environmental effects

- Protective or monitoring equipment and facilities
- Substances, materials, and energy used or produced in the named plant or process
- Communications to shareholders, investors, and the public

Emissions Compliance Management

This supports the determination, measurement, monitoring, and control of emissions at an emissions-producing site. With SAP xEM, these compliance functions can be either based on existing hierarchies or created. The cross-application solution:

- Determines all relevant emissions through functions that track, analyze, and record measurement data (Note: Equipment calibration and maintenance tasks are supported by integration with plant and equipment maintenance systems.)
- Offers sophisticated methodologies and tools for managing emissions that cannot be measured directly, such as the amount of greenhouse gas emissions, which can be calculated using other parameters such as consumption of electricity
- Evaluates existing emissions data and generates forecast scenarios to assess the effects of modifications to production line and operation profiles
- Provides automatic notifications when a reference value exceeds normal plant values for operations (Note: This function includes scheduling, triggering, and tracking measures to determine the impact and the changes necessary to correct operations.)

Emissions Reporting and Documentation

To fulfill legal requirements for documentation and reporting to regulatory authorities, you must continuously track current permits and relevant laws and regulations. SAP xEM has extensive functions that support:

- Submission of reports that contain information about the processes relevant for emissions and a summary of measurement results over a specific period
- Employee access to plant- and process-specific permits as well as current regulations in effect for utilities
- Maintenance of up-to-date information regarding regulatory authorities, including addresses and contact persons

Emissions Trading and Collaboration Management

This function enables you to participate in emissions trading markets and, depending on the trading platform, supports forecasting and trading transactions, including:

- Determination and documentation of emission credits
- Communication of emission credits with emission trading platforms
- Connection to online trading platforms (if the utility is using SAP Exchange Infrastructure technology)

INTEGRATION SUPPORTED BY TECHNOLOGY

SAP xEM is a packaged composite application that leverages functionality in the SAP for Utilities set of solutions. Following a proven SAP development strategy, SAP xEM uses existing SAP modules to deliver an integrated and highly reusable solution with newly developed functionality. For example, the solution can integrate third-party tools for dispersion modeling and for accessing the legal-act database. Interoperability and certification functions are based on products from mySAP™ Product Lifecycle Management (mySAP PLM).

SAP xEM makes full use of SAP NetWeaver functionality. The user interface is a portal, which provides a single point of entry to applications and information. The portal also includes additional functions for user administration and enables users to access reporting and analytical elements through the business warehouse and knowledge management capabilities of SAP Business Intelligence (SAP BI). Integrated Web dialogs empower users to easily build the emissions scenarios required for effective data maintenance. SAP xEM integrates seamlessly with existing enterprise portals.

For effective emissions management, you must be able to integrate data from various systems. This crucial data forms the basis for the emissions calculation, which is needed when you are applying for additional permits or plotting alternative emissions scenarios. Cross-systems communication is performed via BAPI®, new plug-ins, or SAP Exchange Infrastructure (SAP XI).

When combined with geographical information systems, SAP BI supports highly sophisticated evaluation capabilities and gives utilities an opportunity to plan forward. Data collected and managed within SAP xEM can be transferred to the SAP BI business warehouse via extractors so that users can perform analyses and generate reports. Reporting can be integrated easily in the portal. SAP BI also supports the creation and archiving of relevant documents for emissions management. Documents such as permits can also be stored or reported in the business warehouse.

COLLABORATIVE SOLUTION FOR YOUR EMISSIONS MANAGEMENT TEAM

Because it works across both SAP and non-SAP applications, SAP xEM delivers a powerful role-based, collaborative solution for all team members involved in emissions management – a solution that:

Improves processes and reduces risks by providing:

- Consistent information tracking for all processes
- Combined data for organizational planning and risk management
- Transparency for shareholders, investors, and the public

Lowers TCO by:

- Expanding the existing footprint of SAP solutions
- Reducing implementation duration to less than four months (per plant)
- Improving compliance visibility across the organization

Enables total compliance through:

- Fulfillment of required regulations (state, federal, and international)
- Early identification of deviations and critical issues
- Expansion of plant productivity

Integrates all solutions via:

- Full integration with SAP R/3® data (where necessary)
- Functional completeness with tools for analysis, tracking, and management
- Monitoring of plant material balances
- Easy integration of third-party applications

TAKE THE NEXT STEP: INCREASE YOUR RETURN ON INVESTMENT

SAP xEM can help your organization improve its power-generating productivity by aligning processes with the fulfillment of required environmental regulations worldwide. How? By using processes that enhance information flow across the organization, improve environmental portfolio management, and enable you and other utilities to move closer to achieving sustainability.

Because it is based on powerful SAP NetWeaver technology, it helps you lower fixed costs and shorten installation times. Phased implementations are expected to run no more than four months, providing you with quick returns in performance and functionality and minimizing the time it takes to recover your investment. And because it is scalable, the solution expands as the organization grows, increasing the value of your initial investment.

FIND OUT MORE

Learn how SAP xEM can help your organization comply with environmental regulations while improving productivity. Visit our Web site at www.sap.com/xapps