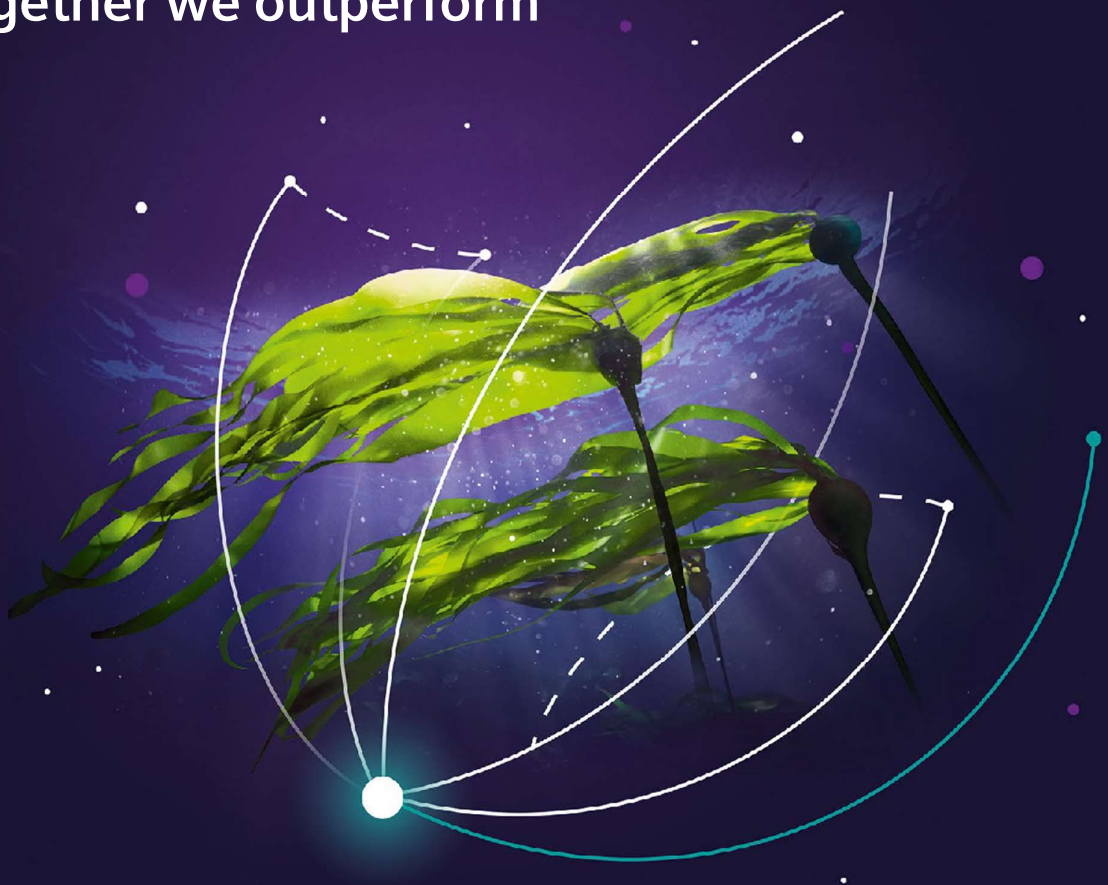
# Power Plant Operation and Maintenance Services

Together we outperform



SIEMENS energy

# O&M Portfolio to choose from

Siemens Energy is not only a major component or solution provider in the power plant business, but also a major service provider offering O&M services for your complete power plant.

## O&M Advisory

A team of well-trained specialists will advise your team in ramping up the O&M mobilization and in the performance of O&M tasks during the commercial operation phase of typically three years or more. And at the end of the contract period, our specialists will leave the site with processes in place, implemented and optimized, to help your team successfully operate and maintain the power plant in the future.

## O&M Management

Siemens Energy specialists can be on staff in key O&M management positions for the contracted period in certain countries. These specialist provide regular on-the-job training to your personnel to help prepare them to successfully operate the power plant after the contract ends.

## Full Scope Maintenance (FSM)

The Full Scope Maintenance is a comprehensive maintenance package which includes maintenance activities performed by Siemens Energy at the power plant utilizing local personnel and a defined number of Siemens Energy specialists. Operation-related tasks remain with the customer. This package can offer more predictable maintenance costs and reduced potential for issues regarding the maintenance of the plant. The equipment covered can include the gas turbine only, the power train or the complete power plant.

A FSM contract can be combined with the O&M Advisory Services to further optimize plant operation.

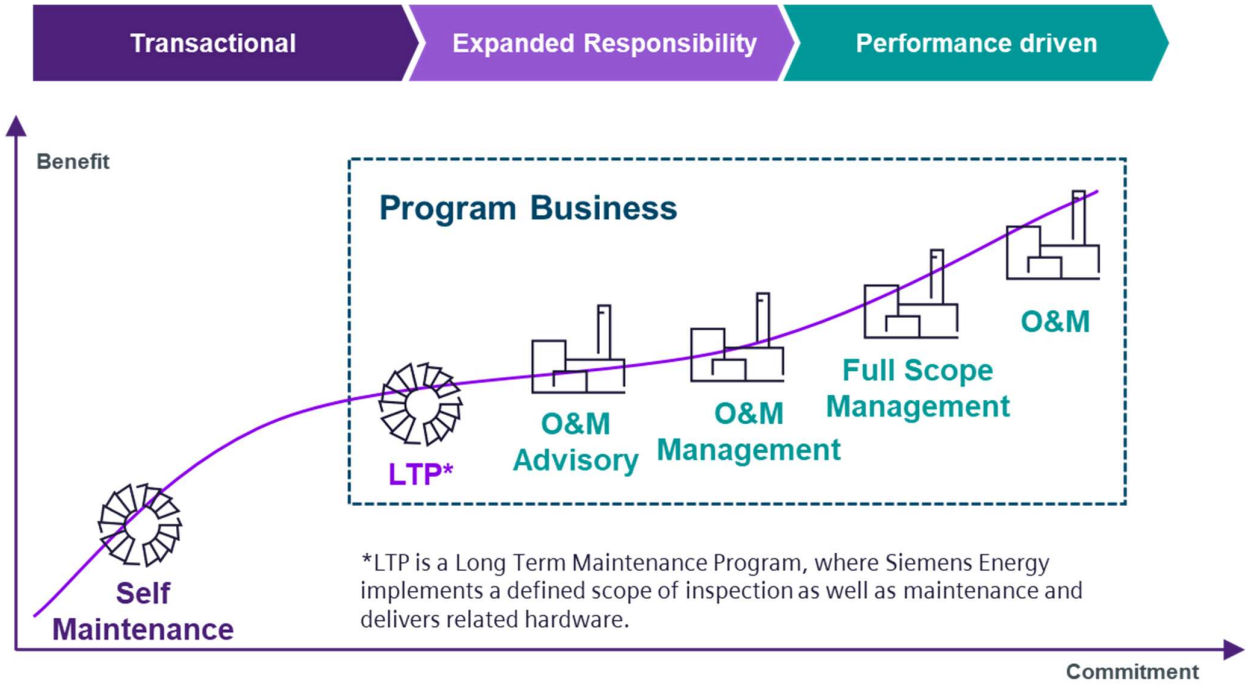
## Full Scope O&M

The Full Scope O&M is a comprehensive package which includes full scope O&M services for the power plant performed by Siemens Energy utilizing local personnel and a defined number of Siemens Energy specialists. With this service package, Siemens Energy takes primary responsibility for the defined O&M scope which can allow you to concentrate on your core business. This agreed program can include performance and cost-based incentives.

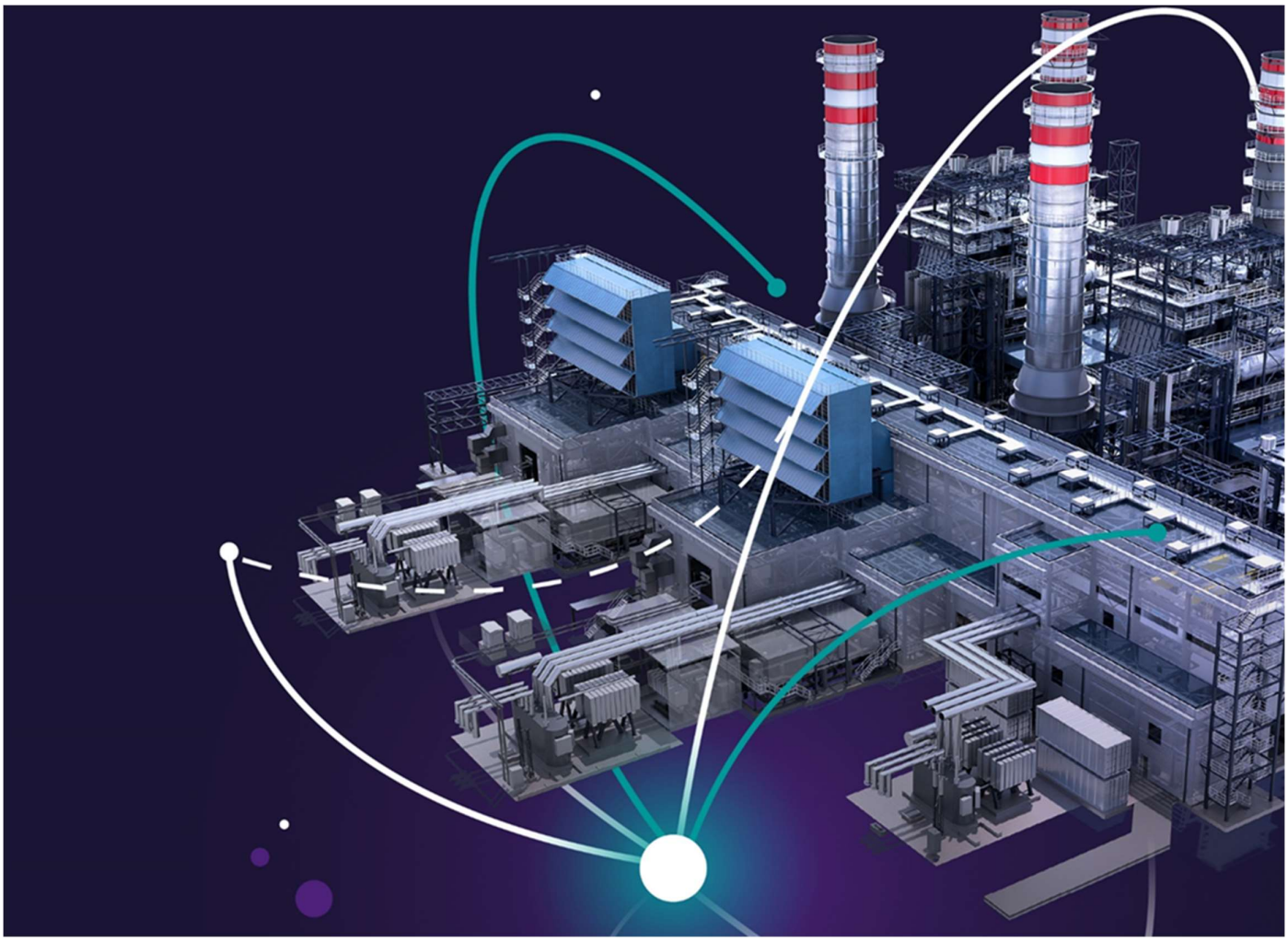
Depending on your objectives, these services can be offered for the gas turbine, the power train or the complete power plant. All of our incorporate best practices we have developed from our global power plant business and high quality, environmental, health and safety standards including as ISO 9001, ISO 14001 and ISO 45 001, since Siemens Energy O&M services are IMS (Integrated management system) certified.

These pillars form the basis for O&M services provided by Siemens Energy and can offer a great level of flexibility to meet your requirements.

The larger the scope you entrust Siemens Energy with, the more Siemens Energy can manage your assets in an optimal way.




O&M Portfolio



# Other individual services you can benefit from

Siemens Energy O&M also offers a range of individual services, which our customers can order independently of the products described above. Typical individual services include:

## O&M Training

Siemens' Energy Operation & Maintenance Training is a people-driven business. Power plant personnel in all technical areas of the power plant must be experienced Competency management and training are key factors in fulfilling this requirement.

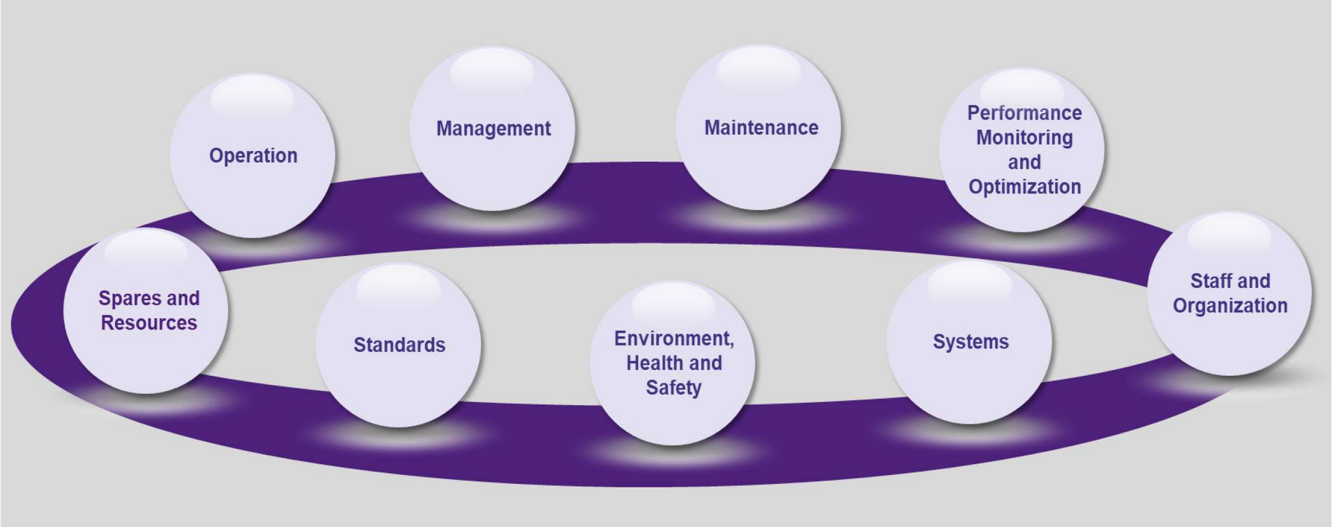
A wide range of simulators are available that can be remotely connectable to your installation to effectively train your operating personnel under simulated "live" conditions. Training can be provided on virtually every technical topic in the field of gas-fired power relevant to operations or maintenance personnel including applicable EHS practices. The level of knowledge of the operation personnel can be tested through the Siemens Energy Operator Certification Program.

The aim is to have the best people in place to serve the customer's requirements to optimize the ability for successful operation.

## O&M Audits and Assessments

Siemens Energy O&M offers an audit service, initially developed to review the performance of Siemens Energy's own O&M teams, to analyze and evaluate the performance of management and processes in a power plant. Seven main elements of your O&M business are analyzed by means of a standardized system to identify potential for improvement. The in-depth assessment is based on an integrated management system focused on power plant operation and maintenance enables a thorough evaluation of your O&M business. Compliance with ISO 9001, ISO 14001 and ISO 45 001 is also assessed through this audit.

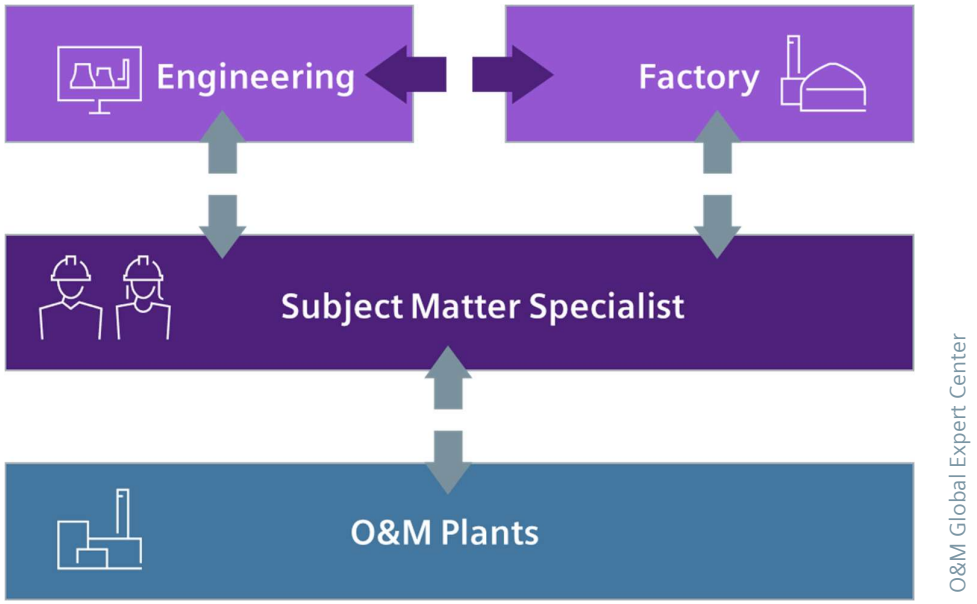
Siemens Energy O&M also offers external O&M Assessments with a defined scope tailored to the customer's objectives. The aim of the assessments is to support the customer in identifying weaknesses and strengths of their organization to help the customer to further improve O&M performance




Elements of O&M Audit

## O&M Global Specialist Center

A group of specialists is located in our O&M offices in Germany with remote access to critical information in power plants operated by Siemens Energy. The goal of the Global Specialist Center is to resolve technical issues as soon as possible to help keep availability of monitored power plants on a high level and inform power plants of fleet issues. With the aid of remote monitoring tools these specialists can rapidly understand and analyze technical issues the power plant is encountering. The specialists have access to Siemens Energy engineering organizations and key subcontractors who can be contacted when required to address a specific or fleet-related issue.




## O&M Asset Management

With Full Scope Maintenance or the Full Scope O&M, Siemens Energy O&M can implement Asset Management in line with ISO 55 001 which can help the customer create even more enhanced value from a power plant. Continuous improvement of a maintenance strategy as well as operation and the installation of asset management adopting changing market requirements and advanced technical possibilities are key factors in the success of the power plant. By aligning both the owner's and Siemens Energy O&M targets, these can move forward together to optimize performance. Open communication and close cooperation between owner and Siemens Energy O&M are the bases for success.

## Computerized Maintenance Management System (CMMS) Implementation

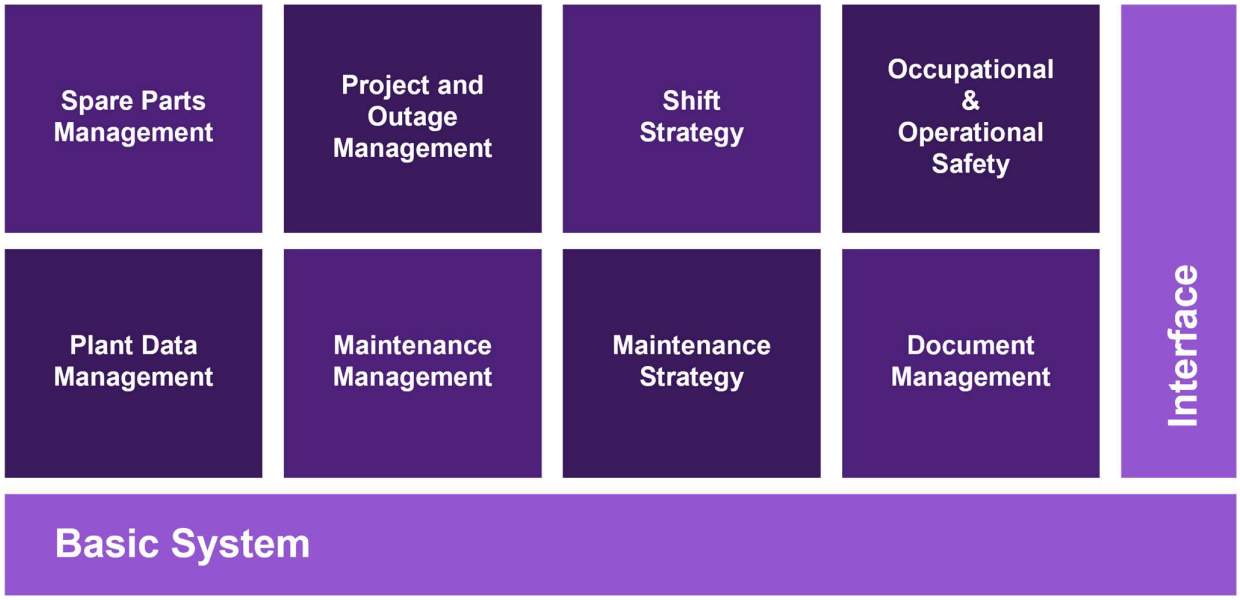
Siemens Energy utilizes an in-house web-based Computerized Maintenance Management System (WebBFS / Mainsaver) in all power plants operated by us. This software tool contains various modules for managing the power plant, such as maintenance planning and tracking, shift management, permit-to-work system, parts and consumables inventory management, purchasing and cost controlling. It can be a beneficial tool to aid the power plant O&M team in performing their work in an ordered, efficient and safe manner. It can also serve to store plant historical maintenance data. Siemens Energy specialists will set up the system for you and aid you in feeding the required information into the system.

## Heat Recovery Steam Generator (HRSG) Inspections

Experience has shown that it is also important to regularly assess – beside the gas turbines – the steam turbines, generators and other important plant equipment. Siemens Energy O&M has developed inspection programs to monitor the condition of the HRSGs during minor and major scheduled outages of the power plant. Through these inspections, technical issues with the HRSGs can be detected at an early stage and recommend mitigation strategies to help preserve equipment life, keep availability high and maintenance costs low.

## Document Management System

Siemens Energy has developed a document management system for power plant documentation named Tecdocpower ™. It is a web-based tool to facilitate the management of power plant documentation with access from different locations. The documentation within the system is structured using an intuitive interface reflecting the outline of the power plant and its equipment. It is linked to the Computerized Maintenance Management System (CMMS) and an important tool for power plants to provide orderly storage of documentation and rapid access to information when and where required.




Modular Maintenance Management System

**With more than a century of service to the power generation industry, Siemens Energy brings its tradition of experience, quality and expertise to every project. As one of the world's largest combined cycle power plant operators, our operation and maintenance (O&M) fleet experience totals more than 38 gigawatts worldwide with customers on five continents.**

Whether you are an independent power producer, a public utility or a manufacturer producing your own power, Siemens Energy O&M can help you boost your operating efficiency, reduce downtime, mitigate your risks, widen your competitive edge, maximize your performance and increase the profitability of your power plant assets. Our O&M portfolio ranges from individual services to an all-inclusive long-term operation and maintenance program. We can tailor the contract scope to your individual objectives.


Benefits of Operation & Maintenance Contracts

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