RWE Technology International

Ready for Operation

Turning a Plant into a Business

RWE

Powering. Reliable. Future.

Team up with RWE Technology International and our O & M experts to achieve your long-term business goals.

Challenge

If you're running a major energy facility, power plant, or fleet – chances are your operations would benefit from a check-up. Volatile fuel prices, growing renewables, changing workforce, and shrinking budgets – the operational landscape has changed. The health of your facility, plant, fleet and business will be at risk. To be competitive, you need to do more with less – less money and less people. Still, your peoples safety must always come first.

Therefore, a careful set of priorities is key to success – making the most out of your resources. Our O & M experts can show you how to keep your people safe – always.

We assist you to startup your generation safe, quick and reliable. We have extensive experience in O & M analysis and interpretation to predict when your asset will need help and reduce losses and people.

Our specialists will determine suitable options for maintenance practices and support you in finding quick wins to reduce costs. RWE can support you to get a heads up on potential problems coming down the pike. Learn how you can see anomalies before they become critical issues.

The following key figures highlight the main improvement areas for any plant, based on our own project and operational experience.

4 %

improvement in yearly operating hours through a focused O & M strategy with significantly fewer losses due to failure.

50 %

reduction in ramp up time possible through technical improvements.

75 %

of plant performance improvement is attributable to human and managerial skills. This highlights the importance of transfering the process know-how to the people involved in the operation.

6–8 %

is the world-class benchmark of maintenance cost related to total sales, to be achieved from small changes in maintenance planning.

10–20 %

reduction in O & M cash costs by sharing resources in your generation fleet and taking advantage of process synergies.

20–30 %

cost reduction through proper Life-Cycle Cost Management and improved availability and flexibility of your plant system.

How we can help

RWE Technology International provides power plant operations and maintenance (O & M) solutions for thermal and renewable power plants and fleets around the world. We have experience working across a wide range of technologies and energy sources, including coal, oil, biomass, combined cycle gas turbine (CCGT), nuclear, open cycle gas turbine (OCGT), solar, hydro and wind.

Business Management
Our understanding of how an energy infrastructure business changes over its life cycle provides a critical perspective in developing effective operation management. Whether it is a plant, fleet, or a mixed infrastructure asset pool, we enable you to learn how operations management and staff can manage and monitor operations across your whole business in a safe and efficient manner.

Performance and Efficiency Improvement
Through our competent advice for better operation and maintenance practices, we help you find quick wins to lower operating costs, enhance efficiency and improve productivity. We make our own experience in operation efficiency measures such as fleet synergies, improved ramp rates, minimum load reductions, cluster management and business process optimization available to your operations.

Mobilization and Commissioning
We support you both in early mobilization plans and enable you to think ahead and become operational, faster. Our project experts help you identify gaps and provide recommendations to get you ready for commissioning activities. We advise you in commissioning planning and safety, provide expert support during execution and supervise your commissioning and handover/takeover processes.

Operational Readiness
Whether you build a new asset or make improvements to an existing one, you want to know your operation will reach planned capacity. We will help train your workforce, ramp-up generation fast, enable your systems, and secure critical spares. By translating your business targets into O & M practices, we'll ensure everything happens at the right time, from planning through to execution, with commissioning and ramp-up as expected or faster.

Technical Support Agreement
Our O & M experts' advice you in how to balance cost and reliability and risk. Our aim is to develop holistic solutions by combining the health of an asset with operational impacts. With best practice technical support we enable you to avoid unplanned activities, reduce associated safety incidents and achieve your O & M targets.

Maintenance and Inspections
By performing our innovative Non-destructive testing (NDT) inspections, we can help you reduce your plant downtime, improve process safety and maintain mechanical integrity. In addition our specialists offer support and guidance in overhauling, repair and refurbishment activities, spare part management and maintenance contracts.

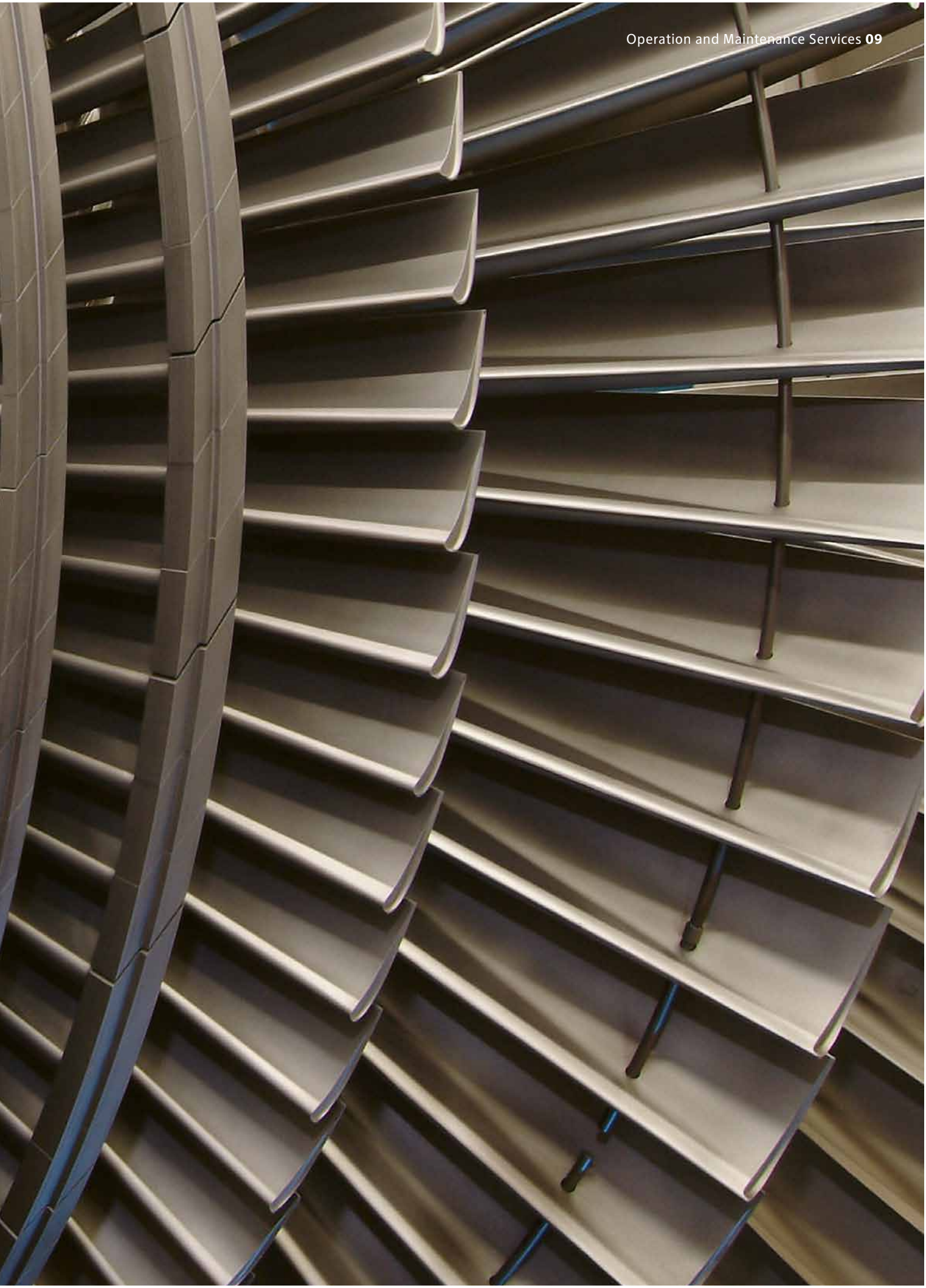
Organization, Processes and IT Systems
Our focus is on optimizing plant availability and minimizing maintenance costs, with a strong emphasis on safety. This is facilitated by well-established systems, procedures, manuals and work instructions. Our clients welcome this holistic approach as it helps them to focus on the core areas of the business.

Training
In order for a plant or fleet to operate effectively, staff must be confident in their roles and be able to respond to any situation. Our O & M experts prepare your people with a focus to ensure your staff has a detailed understanding of the plant, it's O & M procedures and the commercial landscape.

Expertise & Services

There is no one-size-fits-all answer to a successful and sustainable asset operation and maintenance. It all depends on the targets you define for your plant or fleet: Do you want to reduce costs? Improve flexibility? Or Increase availability? From our experience, it's usually a combination of measures which will guarantee the greatest impact on your asset's O & M performance – ultimately reducing overall costs and risks of your entire power plant fleet. RWE brings knowledge of the entire field of O & M, starting with a mobilization plan – one of the keys to successful startup of a new facility.

We provide a full range of tailored services across the life of power assets, from overall fleet management, through plant mobilisation and commissioning, O & M lifecycle management and eventual decommissioning. Our O & M teams are supported by a large in-house team of engineers and technical specialists, all with specific power sector expertise.



Expertise & Services

Strategies and Systems

Effective operational management of power plants is key to maximize the Return On Investment (ROI). By leveraging RWE's global operation and maintenance knowledge, fleet-wide experience and best practice procedures and processes, you enable your plant staff to develop own O & M as well as HSE strategies and practices, customized to local requirements. Through our utility background we can support and guide you to optimize your assets in line with your business objectives.

- Fleet/plant optimisation studies
- KPI evaluation and development
- Cost management
- O & M strategy and planning
- Spare part concept
- IT solutions and implementation support
- LTSA optimisation
- Benchmarks

Mobilization

Preparing a new facility for commercial operation is one of the most challenging endeavors undertaken by a company. To ensure that effective mobilization takes place requires experienced O & M line managers working closely with owners, project and engineering teams, principal contractors and OEMs.

- Mobilization planning support
- Support/participation in plant design reviews
- Support/participation in negotiation of long-term service agreement (LTSA)
- Developing and installing management systems and procedures
- Developing the O & M plan and budget
- Establishing the O & M organisation structure
- Staff training and development
- Participation/supervision in plant commissioning activities
- Ensuring effective and structured hand over into commercial operation

Generation

Building on the experience and knowledge provided by RWE, a utility with more than 100 years' experience in power plants, we make our owner and operator knowledge available to our clients.

Studies and Surveys

- Fleet/plant optimisation studies
- Due diligence
- Pre-feasibility/feasibility
- Plant health check
- Plant technical audit
- Plant integrity study
- Engineering risk assessment (ERAPTM)
- Operation risk assessment (OpRAP)
- Operability RAMS study
- Equipment/technology surveys
- Fuel management strategy

On-Site

- Expediting and Troubleshooting
- Testing and commissioning support
- Outage management, expertise and support
- Specifying maintenance work scopes
- Technical support of maintenance activities
- Electrical support/fault investigation
- Protection/control system support
- C & I Experience

Training

- O & M manager training
- Operator training
- Maintainer and outage training
- Steam turbine, gas turbine and vibration competency training
- Outage training

O & M Consulting

- Plant modifications/modernization
- Overhauls/refurbishment/replacement
- Plant condition monitoring/life extension
- Life-cycle management
- Safety assessment
- Equipment reliability
- Spare part management
- Failure analysis/forensic investigation

Technical Support Agreement

- Experienced engineer(s) onsite support
- Technical back-up for troubleshooting
- Training (e. g. on-the-job and theoretical)
- Overhaul and maintenance supervision
- Inspection management (e. g. NDT)
- Inspection management
- Engineering design reviews
- Spare part re-engineering
- Metallurgy, stress analysis, welding

O & M Organisation

- Organizational structure and review
- People and roles
- Staffing and recruitment
- Customized training

Contract

- Fuel management
- Contract design/re-negotiation support
- LTSA optimization advice
- Tender assessment/warranty support

Projects

We have an international engineering consulting track record spanning over 50 years on all continents, including countries in the Middle East, Asia, South-America, Africa and Europe. During this time, we have worked across many diverse cultures and technologies, and have built strong relationships with our clients by working in partnership to solve their technical and business challenges.

Client/Project	Country	Project Details	Date
O & M Service Company	Egypt	Drafting O & M contracts and negotiation support	**ongoing (2017)**
O & M Service Company	Egypt	LTSA for O & M support	**ongoing (2017)**
O & M Service Company	UAE	Operability review and O & M quality needs	**ongoing (2016)**
O & M Service Company	UAE	Mobilisation concept and support	**ongoing (2016)**
O & M Service Company	UAE	Commissioning and Handover/Takeover support in preparing a new facility for commercial operation support	**ongoing (2016)**
O & M Service Company	UAE	LTSA for warranty management and O & M support	**ongoing (2016)**
Local Power Developer	Pakistan	O & M support contract and mobilisation support	**ongoing (2016)**
Utility	Pakistan	Independent Advisor in O & M contractor selection	**ongoing (2016)**
Utility	Pakistan	Preparation of tender and contract documents, negotiation support	**ongoing (2016)**
Independent Power Producer (IPP)	Malaysia	Review of mobilization activities	**ongoing (2015)**
Independent Power Producer (IPP)	Malaysia	Provision of power plant manager, and engineering services for improvement of plant performance & availability	**ongoing (2014)**
Independent Power Producer (IPP)	Malaysia	Failure analysis for GT compressor	**2016**
Utility	KSA	Optimisation of workshop infrastructure	**2016**
Independent Power Producer (IPP)	Malaysia	O & M competency review of new operational staff	**2016**
Independent Power Producer (IPP)	Malaysia	Compressor failure root cause analysis	**2016**
Independent Power Producer (IPP)	Malaysia	Technical review of milling plant	**2016**
Independent Power Producer (IPP)	Malaysia	CCGT gap analysis	**2015**
Independent Power Producer (IPP)	Malaysia	Emergency procedures workshop	**2015**
Independent Power Producer (IPP)	Malaysia	Training and support for implementation of process safety management	**2015**

ERAP™ = Engineering Risk Assessment Process; OpRAP = Operational Risk Assessment Process;

Client/Project	Country	Project Details	Date
Independent Power Producer (IPP)	Malaysia	Gas leakage analysis (increased generation and change of maintenance practice led to review of historic generator transformer data)	**2015**
Independent Power Producer (IPP)	Malaysia	Review and advice on super heater outlet issues	**2015**
Independent Power Producer (IPP)	Malaysia	Coal handling (unloading and reclaiming)	**2015**
Major Energy Utility	Malaysia	Delivery of ERAP™ (plant failure scenarios)	**2015**
Major Energy Utility	Malaysia	Delivery of OpRAP(risk based identification of areas for improvement in safety, commercial optimization & organizational culture)	**2015**
Major Energy Utility	Malaysia	Power plant review (long term service agreement)	**2015**
Independent Power Producer (IPP)	Malaysia	Identification of operational safety issues	**2015–2014**
Public Service Infrastructure Company	UAE	Engineering consultancy services at coal-fired power station, site infrastructure development study – clean coal generation	**2015–2014**
Independent Power Producer (IPP)	Malaysia	Mill and combustion optimization services	**2015–2014**
Independent Power Producer (IPP)	Malaysia	Delivery of ERAP™ with a focus on boiler plant & fuel handling/storage	**2014**
Independent Power Producer (IPP)	Malaysia	Technical due diligence of boiler & fuel management	**2014**
Independent Power Producer (IPP)	Malaysia	Operations & Maintenance review (delivery of OpRAP	**2014**
Independent Power Producer (IPP)	Malaysia	Health Check with focus on asset integrity and a review of safety procedures	**2014**
Independent Power Producer (IPP)	Malaysia	Boiler assessment (plant operational integrity in case of potential water cannon implementation)	**2014**

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Utility Background

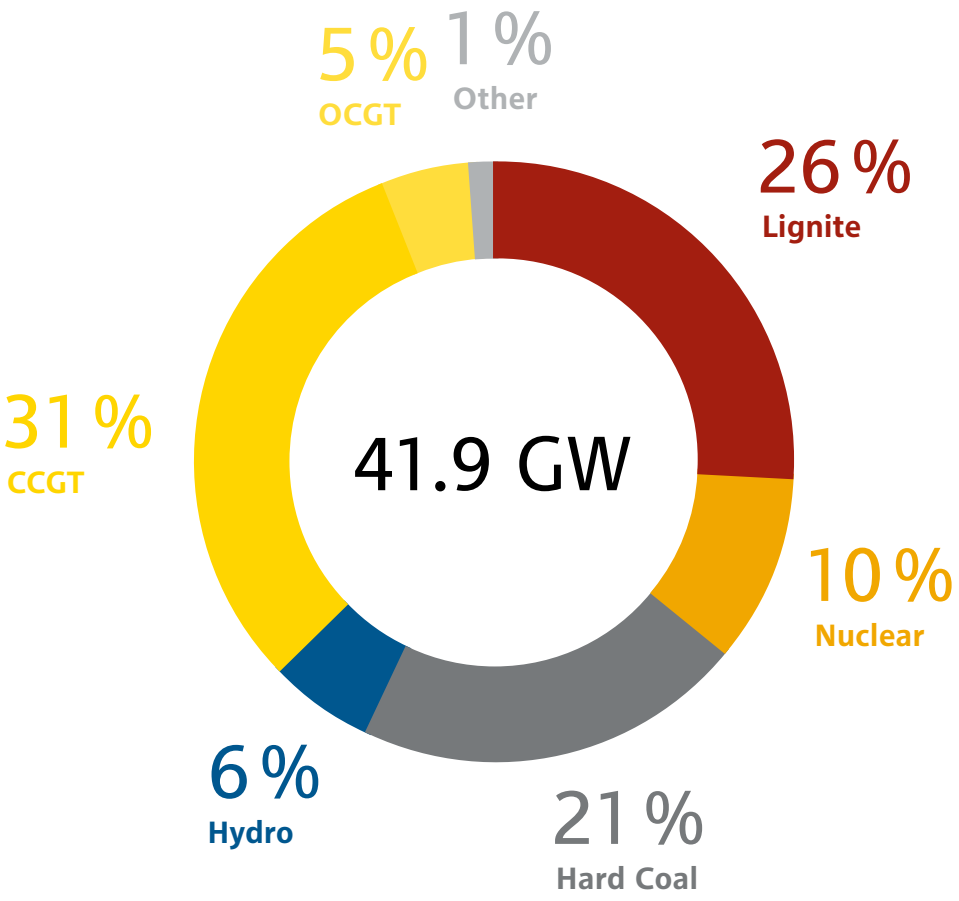
People

Our people define what we do. As part of a power utility, we have extensive experience and in-house expertise within Engineering, Procurement, Construction, Operation, Maintenance and Innovating of power plants. Within this framework, our O & M experts, engineers, and consultants bring together the knowledge, know-how, technology, and creativity needed to meet both your daily operation and overall business challenges. Our heritage enables us to understand our client's commercial objectives and how to support them through effective power plant O & M.

Operational Expertise

RWE is an experienced operator of a well-managed and integrated power generation portfolio.

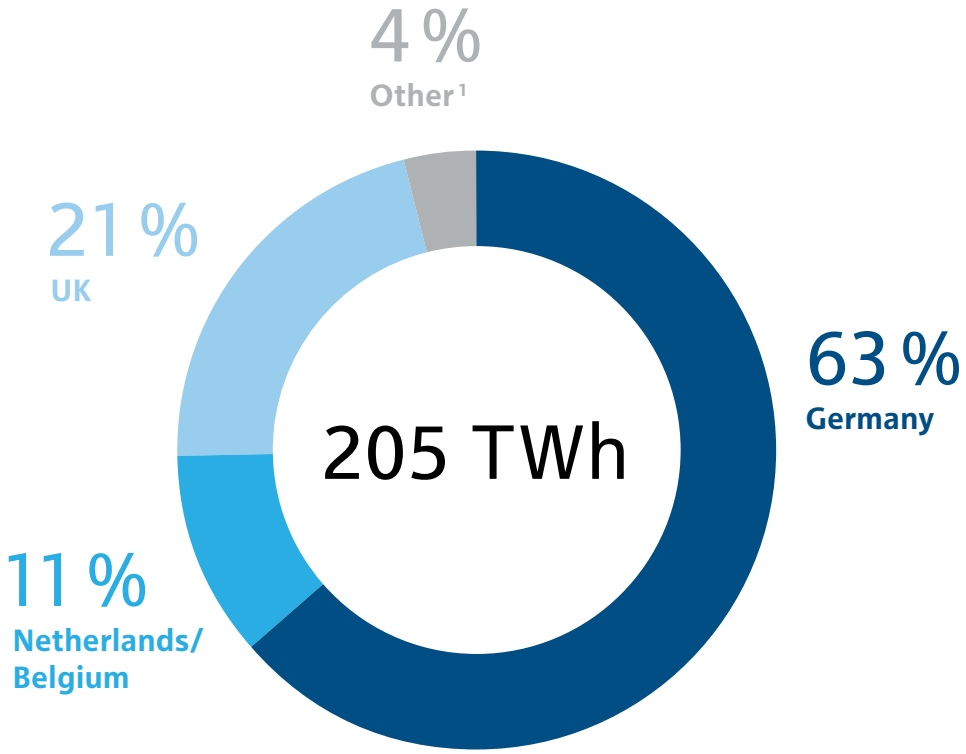
Generation Capacity (2016)

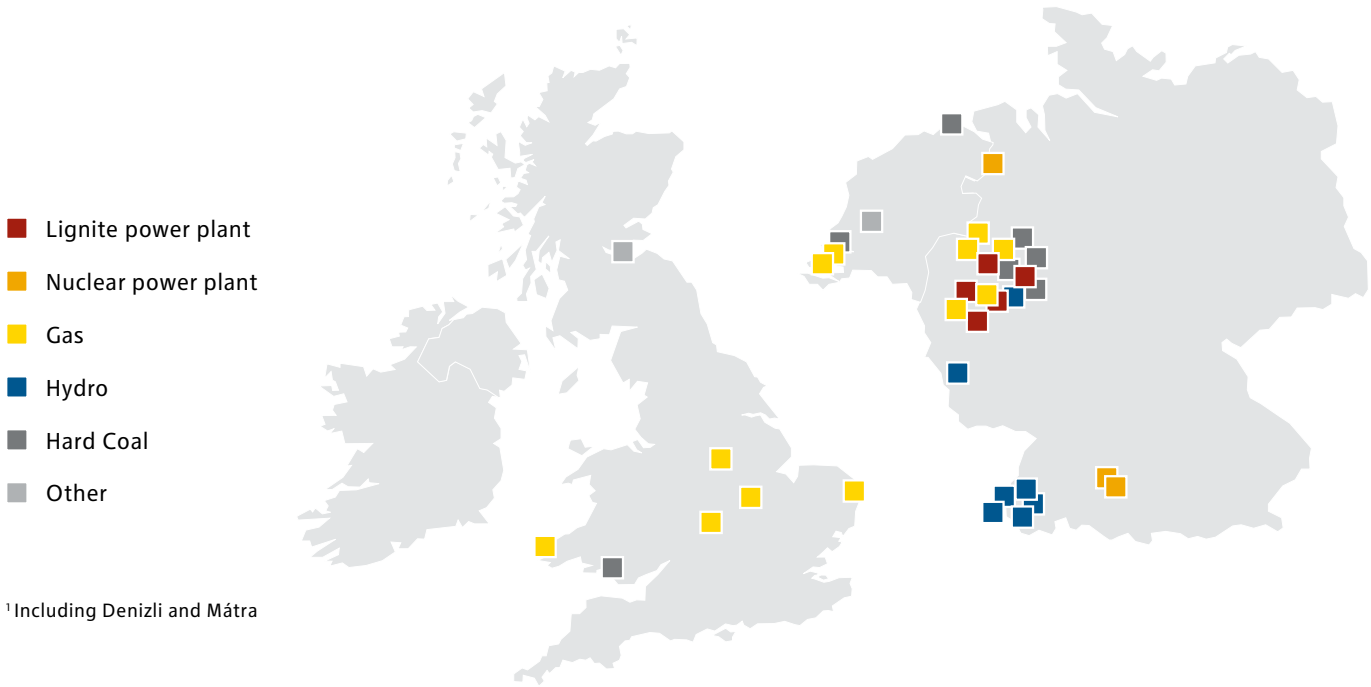


Learn from our Experience

As a power utility, RWE is naturally looking to maximize the returns on its asset investments by optimizing operations and managing risks. We learned that O & M organizations and business processes are often a major key performance driver to cash improvements. We early recognized that shared learning between power plants across the portfolio improves the overall fleet performance. Today we share our Best-in-class O & M structure and continuous improvement culture successfully with our clients.

Production volumes (2016)





[1] Including Denizli and Mátra

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