

Technical solutions
for energy recovery

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We are Uniper

We are a leading international energy company with operations in more than 40 countries and around 13,000 employees. We combine a balanced portfolio of modern assets with comprehensive technical and commercial expertise. Our assets and capabilities enable us to deliver bespoke, competitively priced energy products and services with agility, precision, and speed.

Uniper Energy Services – A heritage of technical excellence

We are an experienced international energy company with a new name. Uniper's know-how is based on a heritage of power industry expertise that dates back a hundred years. Our family tree includes some of the leading companies involved in energy generation and gas networks in Europe – businesses known for their reliability and technical excellence.

We deliver engineering, maintenance, asset management, energy trading, and fuel supply solutions, optimizing the commercial and technical performance of your assets in whichever market you operate. Our services combine experience of new build, operation and maintenance, asset management, and engineering throughout the life cycle of an asset.

We offer new perspectives on energy. As your partners in energy, we have the know-how to work with you to achieve full value from your energy recovery assets and to deliver solutions for the challenges of the future.



Your benefits

Reduce CAPEX

Reduce costs and improve scheduling and quality control from the inception of your new build and upgrade projects thanks to our comprehensive engineering resources and operational experience.

Improve reliability

Reduce downtime through our independent advanced condition monitoring system. We deliver real-time insights into the health of your assets. This gives you actionable early warning of disruptive component failures. We independently review recommended chemistry regimes and identify alternatives to provide the most suitable for your plant design and operating conditions.

Optimize performance

We understand that financial returns are associated with high availability and reliability of your plant. Our plant operation and risk management experience enables us to identify opportunities to improve your plant performance.

Stay compliant

We share our firsthand experience of emissions measurement, pollution control, and legislation to ensure your plants remain compliant while continuing to be profitable. Using our extensive experience of biomass fuel supply contracts and specifications, we develop routine fuel as well as ash sampling programs and analysis to comply with permits and boiler guarantees.

Optimize outage strategy

Manage your plant outages for optimum benefit and minimum operational risk. Partner with us to identify the most cost-effective strategy for you. We offer management of all aspects of your outage process, supported by in-house software.

Understand risks

Gain insight into the condition of your components. Our experienced engineers assess component condition to understand the key risks from any form of degradation, giving you risk-assessed recommendations and proven solutions.

Restore service

Our rapid response to breakdown situations will return your plant to service following unexpected failures. Partner with us to understand problems and determine root causes. Our integrated teams will provide you with clear recommendations for restoring service.



One-stop-shop OEM independence

Comprehensive skills from a single source reduce complexity and risk

We take a holistic approach to your needs, acting cohesively and in a multi-disciplinary way to support you and solve your plant problems. Based on our extensive experience in operating and continually optimizing a large portfolio of generation assets, our teams work hand in hand to proactively prevent issues in the future.

Our operational, engineering, and consulting expertise will support you at every stage in the development, construction, and operation of your energy recovery projects. We understand and manage the particular challenges that biomass and waste present to plant components.

We leverage our experience and independence of original equipment and component manufacturers (OEMs) to choose the best solution.

Maximizing value across the entire asset life cycle

Through-life Services

Our focus is to add value at all life cycle stages of your asset. We have hands-on experience of electrical, mechanical, and rotating equipment, as well as civil and process engineering. By monitoring, modeling, and analysis services we support you to achieve environmental as well as emissions compliance. We support the management, sampling, and analysis of biomass fuel and ash.



Feasibility, Construction & Commissioning

As owner's engineer, we play a critical role supporting and supplementing your resources, acting as an independent advocate. We provide specialist advice on new energy recovery projects – from technical feasibility through to commissioning and hand-over of your new plant. We offer all services required for new build projects and tailor our solutions according to your needs.

Asset Management & Optimization

Identify how performance can be optimized with our technical review of assets and asset management services. We provide solutions for structured maintenance strategies, modifications, and upgrades, all based on the thorough understanding of your current plant's condition. Additionally, we identify, manage, and balance process safety, operational risks, and plant economics.

Operation & Maintenance

To ensure maximum benefit from expenditure and plant downtime we offer a full range of services, from outage coordination to full outage management, and we can operate assets on your behalf. We challenge OEMs and develop solutions based upon actual plant conditions. We continuously monitor plant health to identify potential problems before they develop into failures.

Decommissioning

We have firsthand experience managing the end-of-life options of a broad range of energy technologies. We maximize the value of your assets and ensure high levels of safety and compliance at all times, from plant mothballing to full decommissioning and eventual complete site remediation.

Our Energy Services in detail

Through-life Services

- Owner's engineering services
- Environmental compliance and management
- Fuel and ash management
- Fuel supply review
- Fuel and ash sampling
- Supplier quality services
- Project management
- Health and safety management
- Technical consultancy
- Quality management
- Maintenance strategy
- Engineering support to challenge OEMs
- Plant condition assessment
- Life management and extension
- Engineering standards compliance
- Stakeholder engagement
- Training and development

Supporting claims against OEM



Our client was concerned that performance of the air-cooled condenser of their recently commissioned waste to energy plant was below design values, potentially reducing maximum power output during the summer period. Our specialist tests determined that the air flow to the ACC was almost 60% below the design value, making a significant impact on steam turbine power output during periods of high ambient temperature. Further measurements confirmed the ACC was not operating at design conditions. Our client was able to use the data in claims against the OEM to provide a "fit for purpose" plant.

Boiler efficiency testing



Our client asked us to conduct boiler efficiency tests at a waste to energy plant applying for the EU R1 energy recovery status. We understand that the calorific value of waste cannot be accurately assessed by sampling. Instead we used our modeling software to establish the fuel CV to determine the boiler efficiency. Our results will support our client in gaining the commercial advantages that come from achieving R1 status.



Feasibility, Construction & Commissioning

- Business case assessment
- Conceptual and basic design (FEED)
- Environmental impact assessment
- Survey, audits, and peer reviews
- Governance and compliance
- Grid connection design and application
- Tendering and procurement support
- Design review and approval
- Technical design
- Planning, permitting, and impact assessment
- Project and site management
- Quality assurance
- Commissioning
- Grid code compliance testing
- Risk management
- Claim and variation management

Managing delivery of new plants



Our client chose us to take care of the development of several new waste to energy sites in Germany with a combined capacity of 800,000 t/a. We managed the engineering, QA/QC construction, site and commissioning supervision, and claim management to ensure our client's projects were delivered on time and in budget.

Services package for new plant



We supported our client with a new plant project in the UK from conception to operation. Our hands-on experience gave them the assurance that we could deliver the project to time, cost, and quality and support the ongoing asset operation. Our scope included permitting and consent, supplier quality testing, commissioning, fuel testing, emissions monitoring, pressure systems life management, outage management, and warranty negotiations.



Operation & Maintenance

- Technical, operational, and management expertise
- Performance monitoring and modeling
- Plant and component performance testing
- Boiler surveys/tube failure investigations
- Steam turbine field services and workshops
- Outage inspection and quality management
- Spare parts management
- Failure diagnosis and root cause analysis
- Specialist NDT techniques
- Plant inspection and condition assessment
- Fuel sampling, analysis, and assessment
- Biomass sourcing advice
- Combustion testing and optimization
- Emissions testing
- Catalyst management
- Plant chemistry regime reviews
- Process and plant safety training

Turbine and generator outage



A client asked us to take over the outage for the steam turbine and generator of a 56 MW plant in Germany. We inspected all relevant components, both visually and using endoscopy, and performed isolation measurements on the inductor and stator. As a result, the main oil pump was replaced and minor defects in turbine valves, return valves, and oil pumps were remedied, so that our client benefited from the minimum loss of operational efficiency.

Emissions abatement optimized



Our client's plant was operating close to environmental permit limits despite high levels of ammonia injection. We investigated the selective non-catalytic reduction system used for NO_x abatement on the plant's fluidized bed combustor. By using real-time test data we optimized the injection lance configuration. This enabled our client to achieve lower NO_x emissions and reduce their operational costs.

Avoiding corrosion risks



Our client, a UK-based operator of several energy recovery plants, assigned us to review the boiler water chemistry regime at several of its plants. We identified the chemistry regime and that the targets established by the EPC contractor were not appropriate for the plant design and would introduce corrosion risks in the water-steam cycle. Equipment performance problems were also identified. We are working with the client to ensure that risks are minimized at existing and future sites and avoid forced shutdowns and reduced efficiency caused by corrosion and boiler tube failures.



Asset Management & Optimization

- Advanced condition monitoring
- Parts life extension
- Maintenance strategy, management, and optimization
- Modifications, upgrades, and innovation
- Risk management
- Plant area flexibility assessment
- Plant preservation strategy
- Plant status review
- Plant performance optimization
- Plant and process improvement/optimization
- Operational maturity assessment
- Benchmarking studies
- Governance and standards

Repairs and downtime saved



Our client asked us to identify the root cause of a transformer failure at their UK plant. We gave an insight into the cause and damage, and assessed components at risk. We confirmed the suitability of spares and oversaw recommissioning. With us as a partner, our client saved €1.23 million in repair costs and possible downtime.

C&I system renewed



A client in the Netherlands entrusted us with the renewal of the control and instrumentation system in their waste to energy plant producing 700,000 t of process steam and 105,000 MWh of electricity. We led the process engineering, project management and programming, and hardware engineering as well as the commissioning and the successful trial runs of the new system. As a result, we have achieved cost savings and operational efficiencies by delivering a state-of-the-art C&I system, which is a central part of life extension measures for the plant.

Support for plant upgrade



We carried out furnace measurements to prove compliance with the 850oC residence time and uniform mixing of combustion gases within our client's energy recovery plant. We calculated furnace residence time using data obtained from the use of suction pyrometers. Our client was able to use the data in design calculations to upgrade the furnace to increase plant performance.



Decommissioning

- Planning, permitting, and impact assessment
- Decommissioning strategy
- Managed shutdown
- Mothballing
- Dismantling
- Site and safety management

Relocation of turbine and generator island



A German client asked us to relocate the turbine, gearbox, generator, and oil system of a 34MW_{el}, 90MW_{thermal} waste to energy plant to a new location. We decommissioned and dismantled the turbine in its original location, inspected and refurbished all components, and installed the turbine on new foundations at the new location. As a result, the turbine and generator island were not only relocated to another plant, we could also increase the process steam pressure and equip the system with a new control and instrumentation system.

Energy Services

Contact us for a reference list of projects:
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Uniper Kraftwerke GmbH
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