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Thermal Power

HATCH



Supporting reliable baseload power generation

From the core: Navigating thermal energy challenges

The role of thermal power generation is shifting like never before. Where it once provided baseload electricity for many markets, it now plays a major role in steadying a grid, especially with the integration of **renewables**. Trends in the market are driving thermal power generation to be more cost effective and generating companies want to make the most of their assets while finding socially responsible ways to move from carbon-intensive technologies towards cleaner fuels. Evolving government regulations are also

having a positive impact on how we design and construct thermal plants.

Today, modern thermal power stations must be agile and flexible to meet the demands of the changing market. That's what successful energy projects now must deliver: the right technology, together with the best fuel source, high efficiency, and a design that meets current energy, environmental, and social regulations. All this, and strong project economics, too.





Thermal power expertise and capabilities

Thermal generation delivers dispatchable power with high ramping capability, essential for frequency regulation and grid stability.

Thermal power plant development

You need a partner with experience, one who has been through this process many times, who will properly consider each important aspect of your project: financing, environmental requirements and **social engagement**, design, and technology. We work with you, making your projects successful by providing engineering, procurement, and construction management services to minimize **project risks** and maximize profitability.

Engineering, procurement, and construction management

Proven procedures and processes are needed to deliver successful **engineering**, procurement, and **construction management** (EPCM) projects, whether in grid-connected or remote locations. Our procurement team utilizes our global database to evaluate the best **technologies** and equipment from nearly anywhere in the world. Working hand in hand, our procurement and construction management team understands quality-assurance compliance, from factory to site to service.

Prefeasibility and feasibility studies

It's important to select the most commercially viable option and complete sufficient up-front engineering work to determine a project's viability. To minimize risk, approximately 25% of engineering should be completed in the feasibility phase, defining and developing a comprehensive scope of work, project execution plan, and cost estimate. Our sustainability-in-design concept incorporates social and environmental responsibilities early in the life cycle, ensuring principles and concepts are factored into achievable project objectives.

Owner's engineer and independent engineer

Support is critical during the design and construction phases. Plants must be designed and constructed to meet the technical requirements of applicable contracts. You need a partner that integrates into your cohesive team to verify designs, monitor **construction**, and proactively address issues. As independent engineer experts, we also directly support investors and lenders, who want to know that their investments are safe. An assessment conducted by a trusted advisor like us puts them at ease, knowing that the project is technically and financially sound.

Regulatory support, permitting, and approvals

We can help you navigate the often difficult laws, **regulations**, and **permitting** processes in almost any jurisdiction. We're experienced with a wide range of regulatory requirements in many regions around the world. We go where our clients are, and where they need us to be. We work with trusted local partners to offer you world-class yet local services, where they matter most.

Technical advisory and consulting services

The success of a project, from concept development to commercial operation, depends on the effort applied at the front end. **Advisory services** are the comprehensive insights and solutions that transform projects from initiation to execution, a practice centered in deep industry knowledge and tried-and-tested management consulting approaches and skills. As a partner with the right technical expertise, we will work alongside you, offering support through every phase to ensure your success.

Operational performance

Thermal power generation facilities must be reliable and dependable. They need to respond quickly to their market or end users' needs, because failing to do so can mean significant penalties or lost revenue. This requires significant capital investment and a regular stream of sustainable funding to ensure the facility is maintained and able to be reliably dispatched, economically and **safely**.

We work with you, on the ground in your facilities. We develop strategic operational performance programs that boost reliability and efficiency, increasing the profitability of your thermal assets. Then, we follow up and support you across the full business life cycle, continually improving your **operational performance**.

Plant optimization and operational support

In uncertain economic climates, power generators must optimize their **asset management** practices and extend the life of their plants. You need to achieve more, but with limited capital. We partner with our clients to make the most of their existing assets. We understand your business, embrace your business drivers as our own, and dedicate our technical excellence to finding solutions that realize better business outcomes for you.

Refurbishments and retrofits

Many thermal power facilities are shifting to new modes of operation never considered when they were built. This, along with evolving regulations, sometimes requires these facilities to refurbish their equipment or retrofit new **technology** to maintain profitability. Working in a brownfield environment is challenging. Doing it successfully requires an agile partner who can adapt and provide innovative solutions to address any challenges that may arise.

Advanced waste heat recovery

Our advanced waste heat recovery solutions are designed to reduce emissions, improve efficiency, and enhance sustainability across various industries. Our ECOSTAT Heat Exchanger technology and ECOFLOW solutions are deployed to recover waste heat from a variety of liquid, gaseous and solid streams. These systems convert waste heat into useful energy products like steam, power, and industrial heating, offering fully integrated heat recovery and utilization solutions from conceptualization to operation.

By converting waste heat into useful energy inputs, we help improve operational profitability through lower energy costs and/or added revenue from energy exports.

Geothermal

An alternative power source to consider is geothermal energy production. Geothermal offers a stable baseload long term, with the potential to also provide by-product heat.

We have extensive expertise that extends across many aspects of geothermal energy such as **engineering**, operations, technical advisories, economics, and more. We work with developers, utilities, operators, process plants, technology experts, and industrial facilities to provide life cycle solutions for both power and integrated processes. We listen carefully to your needs and deliver solutions that bring your project from concept to reality.

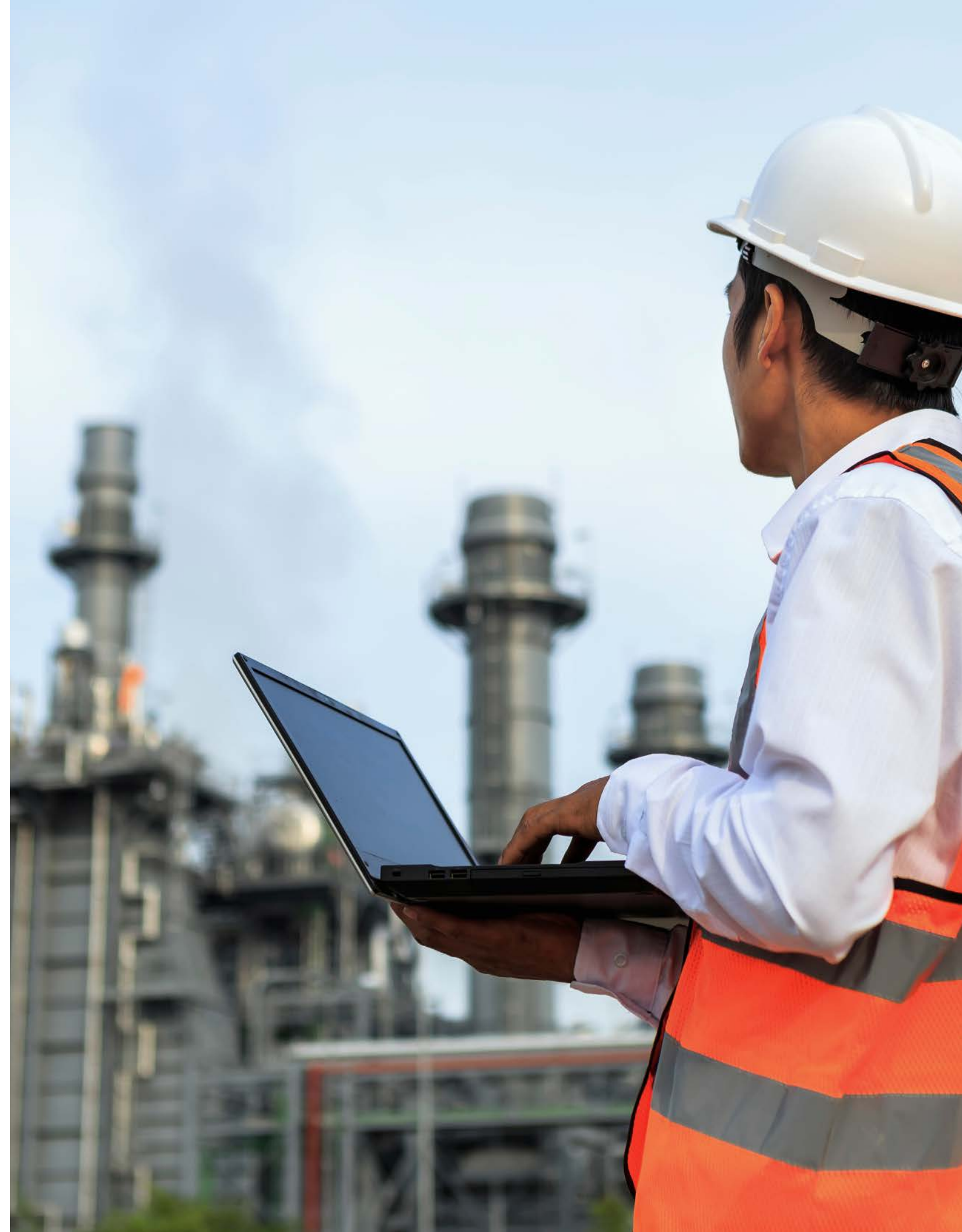
Asset retirement

Planning for new projects or managing end-of-life assets requires foresight. Decommissioning is essential and can become a costly surprise if overlooked or not factored into the life of an asset. We follow a standardized five-phase approach: Planning, Retirement, Decommissioning, Demolition, and Closure, ensuring safety, efficiency, and risk control. Our demolition standards and lessons learned from diverse projects drive continuous improvement. With expertise across multiple sectors, we provide resources and strategies to help clients retire assets responsibly and cost-effectively. We help you start with the end in mind and guide your asset retirement journey with proven methods and industry-leading knowledge.

Energy storage

Industries are increasingly adopting innovative technologies to make their operations more sustainable. Managing the mismatch between the supply and demand of renewable sources of heat and power drives the need for effective energy storage solutions.

We help clients across mining and metals, district energy, oil and gas, and power generation identify and engineer tailored energy storage solutions. Our expertise spans emerging technologies such as thermal energy storage (TES) and compressed air energy storage (CAES), ensuring optimal performance and seamless integration. From concept to deployment, we provide strategies that enhance sustainability, improve reliability, and support the transition to low-carbon operations.





Selected project experience

Delivering one of the world's largest captive power plants

Emirates Global Aluminium (EGA), UAE

We expanded the Emirates Aluminum (EMAL) Power Plant, making it one of the largest captive power facilities in the world. As EPCM contractor, we integrated a new GE 9F.03 combustion turbine and heat recovery steam generator, converted an existing simple cycle unit to combined cycle, and implemented a steam management system capable of handling a 531 t/h high-pressure steam load reduction. Our global team, with support from offices in the UAE, South Africa, Canada, Australia, and India, delivered the project on time and on budget. The completed facility reached a total capacity of 3.5 GW, offering enhanced thermal efficiency, operational flexibility, and reliable steam and power supply to the smelter and meet the new alumina refinery demand.

Advancing reliability through innovative energy design

Newfoundland and Labrador Hydro, Canada

In Newfoundland we supported a comprehensive strategy to maintain reliability of existing assets while preparing for the future. We first completed a full condition assessment and life extension study for the Holyrood Thermal Generating Station, evaluating standby operation options, quick-start scenarios, and life cycle cost estimates. Next, we conducted a concept design for a standby gas turbine facility, including technology screening, site selection, environmental assessments, class 4 estimate, and level 2 schedule. Building on this, we delivered a FEED study for a 150 MW gas turbine plant at Holyrood with expansion capability to 300 MW, ensuring a resilient, future-ready power system.

Igniting South Africa's energy future through gas-to-power development

Phakwe Group, South Africa

We are serving as Owner's Engineer for a 1,600 MW Combined Cycle Gas Turbine (CCGT) plant in Richards Bay, supporting gas supply, plant development, and grid integration. Our scope includes design basis, configuration modeling, layout planning, site utilities, and functional specifications, while engaging EPC contractors and assisting with environmental approvals. The plant will use GE's high efficiency 9HA.02 turbines, fueled by imported LNG via the planned Zululand Energy Terminal with onshore regasification and pipeline distribution. Power output from the facility will connect to Eskom's grid through 400 kV lines. This project will mark a transformative milestone in the country's energy reliability.

Harnessing heat beneath the Salton Sea for green power generation

Controlled Thermal Resources, USA

Tapping into the immense Salton Sea Geothermal Field, the Hell's Kitchen Project converts superheated brine into baseload electricity. Our engineering team conducted detailed evaluations of multiple plant size scenarios and compared single-stage and multi-stage flash configurations to identify the optimal design for efficiency, reliability, and cost-effectiveness. Corrosion mitigation strategies and robust material selection address extreme salinity and scaling challenges, while a closed-loop system minimizes water consumption and emissions. This approach establishes Hell's Kitchen as one of North America's most advanced geothermal facilities, delivering sustainable power for decades to come.

Engineering high-efficiency combined heat and power for remote mining

Vale Newfoundland & Labrador Ltd., Canada

We expanded Voisey's Bay mine's power and heating infrastructure by completing detailed engineering for two 19 MW combined heat and power (CHP) plants and integrating Caterpillar medium-speed gensets into an optimized powerhouse design. Each CHP plant maximizes the heat recovery from engine systems to meet a 21 MWth mine air heating demand, supplemented by diesel heating. We also upgraded the control systems during a critical outage, supported construction, and led commissioning to integrate new units into the isolated power grid. The results: efficient CHP performance, flexible load sharing, and redundancy across three operating plants, ensuring reliable power and heat supply for mine operations.

Supporting an equitable energy transition in Mexico

Actis, Mexico

Actis, a leading global investor in sustainable infrastructure, contracted Hatch to provide technical due diligence for energy assets in Mexico. The first being a set of three combined cycle power plants with a collective capacity of 2,260MW and a 54km natural gas pipeline. Second, a 2x1 combined cycle power plant rated 850MW, and a 3-unit simple cycle gas turbine power plant rated 100MW. We delivered comprehensive technical due diligence for this project, covering all critical aspects including plant design, performance, operations, agreements, and regulatory compliance. This included detailed reviews of technical capabilities, operations and maintenance practices, key contracts, and financial model inputs. The findings were consolidated into a cohesive report that supported the bond offering for Valia Energía. Throughout the process, our experts provided ongoing support, addressing investor inquiries, and ensuring transparency and confidence in the technical foundation of the investment.

Powering progress in South Korea

Daewoo Engineering & Construction, South Korea

We supported Daewoo E&C in delivering the 956 MW Pocheon Combined-Cycle Power Plant, one of South Korea's most efficient gas-fired facilities. As Owner's Engineer, we led front-end engineering, selected two MHPS 501J gas turbines, optimized the steam cycle, and developed key design specifications. The plant achieves over 60 percent efficiency and ultra-low NO_x emissions. We also prepared bid documents, supported contract negotiations, and provided technical advisory services through design, construction, and commissioning. This project strengthens South Korea's energy infrastructure while helping independent power producers deliver cleaner, more cost-effective electricity to the grid.

Hydrogen innovation in gas turbines

Atura Power, Canada

We supported Atura Power in evaluating and delivering a hydrogen production facility that taps into clean, off-peak electricity from Ontario's grid. This hydrogen is blended with natural gas and co-fired in the Halton Hills Generating Station (HHGS) turbines (2 × SGT6-5000F units), achieving measurable reductions in greenhouse gas emissions during peak demand periods. Our team delivered FEED, detailed engineering, and construction support. The project targets hydrogen blends of 5–15% by volume, paving the way for cleaner power generation.

Fueling the future with reliable energy

Snowy Hydro, Australia

In New South Wales' Hunter Valley, the Hunter Power Project is helping Australia transition from coal to reliable energy. This 660 MW gas-fired peaking plant provides fast, dispatchable energy to stabilize the grid during peak demand and support up to 2,000 MW of renewable integration. We played a key role in the project's thermal systems, contributing expertise in high-voltage protection, control systems, mechanical commissioning, and operational readiness. Our team led quality assurance, developed operational procedures, and ensured compliance with national regulations. Through our READY system, we supported a smooth transition to operations. The result, a reliable energy solution that eliminates 6 million tons of CO₂ annually while enabling Australia's clean energy future.





About Hatch

Hatch is a global engineering, project delivery, and professional services firm. Whatever our clients envision, our teams can design and build. With over seven decades of business and technical experience in the mining, energy, and infrastructure sectors, we know your business and understand that your challenges are changing rapidly. We respond quickly with solutions that are smarter, more efficient and innovative. We draw upon our 10,000 staff with experience in over 150 countries to challenge the status quo and create positive change for our clients, our employees, and the communities we serve.

Find out more on www.hatch.com



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