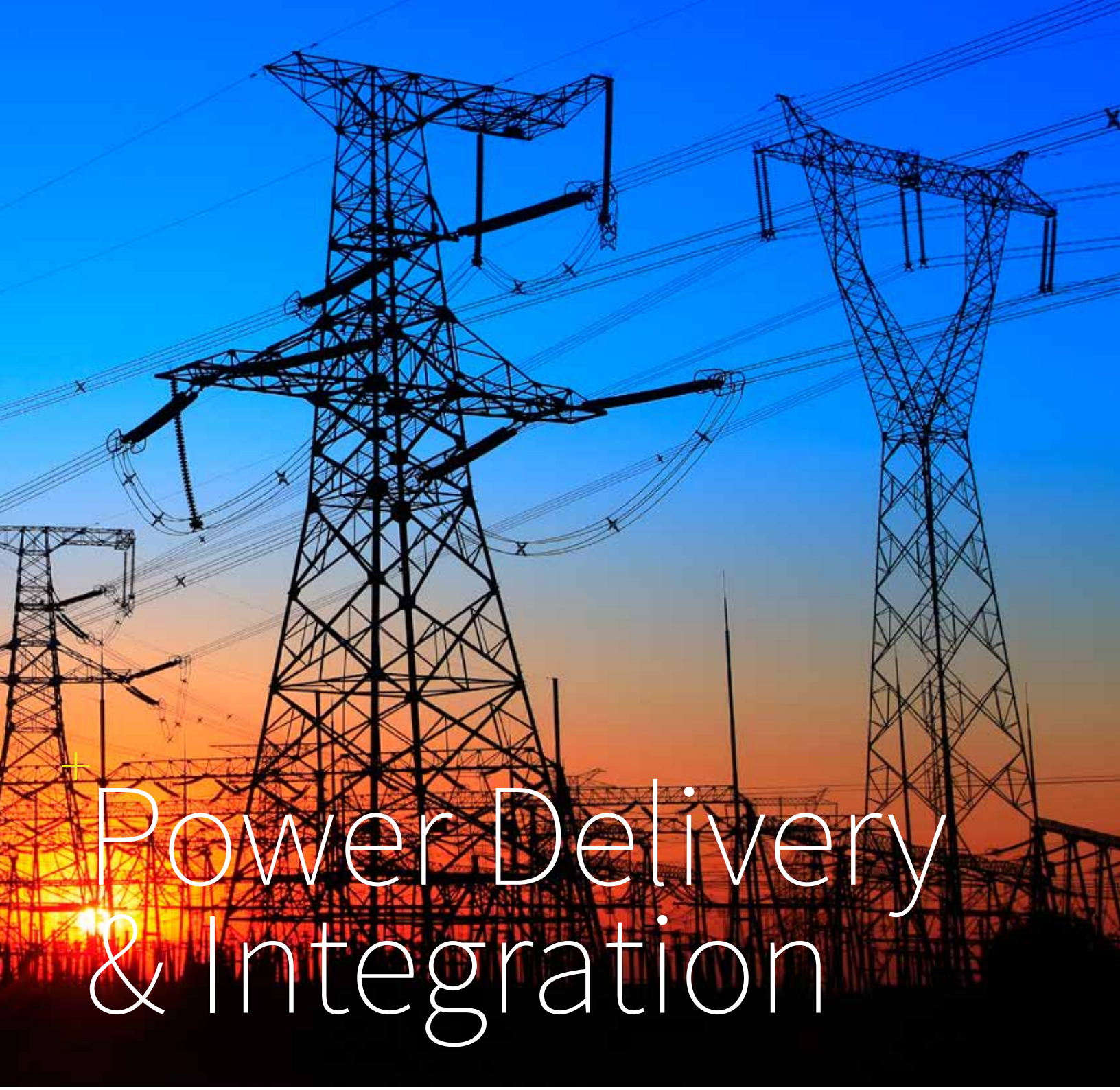

Power Delivery & Integration

HATCH

Partnering to solve your toughest challenges

The world's need for power transmission and distribution infrastructure continues to grow, driven by reliability issues and asset aging in some regions, load and generation growth in others.

Regardless of your project requirements, power delivery infrastructure is becoming more challenging and expensive to site, design, and construct. And to operate and maintain, safely and reliably.

We can help.

With over 80 years of experience in planning, designing, and executing power delivery projects at voltages up to 500 kV ac and +/- 500 kV dc, we have the experience and expertise you need. Worldwide, we've delivered over 25,000 kilometres of high-voltage transmission (ac and dc), and over 15,000 circuit-kilometres of subtransmission and primary distribution systems.

We've worked with many organizations like yours, developing more than 300 HV substations and converter/FACTS stations. We've integrated thousands of megawatts of distributed generation and storage into transmission and distribution networks, in on-grid connections and isolated microgrids.

We're experienced experts, ready and able to assist you with strategic advisory services, strategic or system planning, or full project delivery services. From asset and operations management through upgrades, decommissioning, and refurbishments, you can count on us for support throughout the full life cycle of your assets.

330 kV Hwange-Insukamini & Hwange-Sherwood Powerlines Servitude, part of the transmission upgrades for the Hwange Power Station Expansion Project in Zimbabwe

Essential services, sound strategies

Whether it's system upgrades, or planning and implementing major integrated works and developments, our objective is always the same: to address your most serious challenges and solve your toughest problems.

Power system performance analysis and system planning studies

With decades of experience analyzing the performance of power systems and optimizing their development, we have leading-edge analytical tools and the know-how to improve your power grid facilities.

Engineering and project delivery services

You need results. We deliver them. Safety, quality, and environmental compliance are the cornerstones of our project delivery process, beginning right at the concept stage. State-of-the-art 3D modeling, design techniques, and the most advanced software tools minimize project risk and maximize profitability.

We bring world-class expertise in the design of ac and dc transmission systems, substations, and distribution systems. We're known for our intimate industry knowledge of both grid expansion and strengthening, and integrating distributed generation and storage.

Route and site selection studies; environmental planning and permitting

You need a partner with experience producing and coordinating all the associated pieces of your plan and project. We draw on a pool of multiskilled, multinational professionals who can be consulted and dispatched anywhere in the world. The result? A unique combination of engineering, construction, environmental, and socioeconomic expertise. All under one roof, managing your strategy, financing, construction, and social license risks. All at the same time.

Due diligence, independent engineer and lender's engineer services

Our power industry experts have worked with organizations like yours all over the world, in every type of climate and environment. With proven results, we can offer a full range of assistance to buyers, sellers, and financiers of power delivery assets.

Management consulting services

Power sector reform. Institutional change and capacity building. Business strategy and regulatory affairs. When you partner with us, you get trusted advisors with experience in every aspect of power transmission, at every stage of development or operation.

Asset management and operational performance

Our experts manage and assist with asset-management process reviews; audits and improvement plans; asset condition-assessments, process developments, and studies; asset risk-assessment studies; and risk-based investment plans. We're experienced at developing O&M process reviews and improvement plans, and feasibility studies for investments in facilities, systems, and processes. In operational risk management, we're your experienced, trusted partner.

Tower erection on the Interior to Lower Mainland (ILM) Project for BC Hydro

Global presence, local focus

All over the world, our teams of professionals contribute experience and industry intelligence to power integration technologies. Optimizing transmission and distribution systems. Making processes more efficient. Partnering with you to build new facilities, renew and repurpose existing ones, and support your operations in every way possible.

Maritime link

Nova Scotia & Newfoundland and Labrador, Canada

The electrical grid solution chosen to allow Nova Scotia to import power from its neighbor is an HVdc link, consisting of 350 kilometres of high-voltage ac and dc transmission lines in Newfoundland and Nova Scotia, ac/dc converter stations, and supplementary electrical facilities. The 500-MW, +/- 200 kV-HVdc link will also require a submarine HVdc cable link to cross the 170-kilometre Cabot Strait.

Except for the submarine cable link, the front-end conceptual and feasibility-level design was provided for all project facilities. Technical specifications were prepared for the ac/dc converter stations.

Hatch also provided regulatory support to Nova Scotia Maritime Link Inc. Subsequently, we were selected to provide detailed design services for the project, and this mandate has been extended to include engineering and quality management, and construction support during project execution.

Only the second voltage-source converter application in the world at these voltage and power levels, this was a leading-edge project, one of a very few to be deployed for mixed overhead and underground HVdc transmission. The unique skill sets our team offered were key to delivering this ground-breaking project so efficiently and effectively.

HVdc tower erection for the Maritime Link Project

Hatch has behaved as a true partner…and we will continue to rely on Hatch throughout the remainder of the project execution. I highly recommend them for project development services for ac and dc transmission projects.

—Rick Janega | President & CEO,
Emera Newfoundland and Labrador

Transmission facilities near the
Hwange Thermal Power Station

Hwange transmission integration

Zimbabwe Power Company, Zimbabwe

An additional 900 MW of generation capacity is being added at the Hwange and Kariba power stations. This significant expansion of the 400 kV and 330 kV transmission infrastructure is required to ensure that the extra high-voltage (EHV) power network can deliver electricity to end users reliably. Transmission upgrades include over 360 kilometres of new EHV power lines, and new or expanded 400 kV and 330 kV substations at Hwange, Insukamini, and Sherwood.

Hatch managed the full suite of services to plan and execute the Hwange project, including defining the optimal network expansion activities, route and sites selection, and management of a EPC contractor from China.

ATCO Electric – 240 kV substations

Northern Alberta, Canada

This major system will improve power supply and reliability, supporting growth in this important region of the province. The program includes two new 240-kV substations, named Black Fly and McClelland. Collectively, they comprise seven 240-kV circuit breakers, five 240-kV line terminations, and associated equipment. The stations were designed for ultimate configurations comprising fourteen 240-kV circuit breakers, ten 240-kV line terminations, two 240/144-kV transformers, and a 144-kV switchyard.

The scope of our services included detailed engineering and design services for the civil, structural, and electrical elements, and the protection and control design of the two stations. 3D modeling was used to design the layouts and electrical facilities. The services were completed under budget and ahead of schedule.

Isang's Ranch substation
in Botswana

Isang's Ranch substations project

Botswana

The integration of the Moropule "B" Power Station into the Botswana power grid required a 400/220-kV substation with four 400-kV bus connections, eight 220-kV bus connections, three 315-MVA transformers, and both shunt and series compensation facilities. The unit will electrify some hundred villages and improve reliability for several others experiencing severe power shortages.

Hatch's scope of services included feasibility study, design, specification, procurement support, and construction and commissioning oversight.

Energia Austral transmission project

Chile

This high-voltage transmission system was the solution proposed to transmit about 1,054 MW of power from three power stations in the southern area of Puerto Aysen to the interconnected central grid. The project is divided into two subsystems: a high-voltage ac system and a high-voltage dc system.

The project consisted of 137 kilometres of overhead and submarine 220-kV ac transmission lines and associated substations, and 840 kilometres of overhead and submarine bipolar +/- 500 kV dc transmission lines. Associated ac/dc converter stations and ground electrode sites were also included.

Hatch has carried out extensive due diligence and independent engineering reviews of the project development activities to date. Over 300 documents were reviewed, including early concept planning and prefeasibility studies and project feasibility documentation, such as technical design documents, the master schedule, siting investigations, environmental planning and permitting, land acquisition planning documentation, a capital budget estimate, and a project risk matrix.

Raglan Mine wind energy-storage microgrid project , Glencore plc

Northern Quebec, Canada

Glencore retained Hatch to study and design the implementation of wind power at its Raglan Mine in a remote region of Northern Quebec. The aim was to reduce diesel fuel consumption and cut operating costs.

We developed preliminary designs for the facility, addressed potential grid integration issues, analyzed the wind resource, and estimated the wind power production. The concept study determined the optimal configuration for the site, and this led to the selection of a 3-MW wind turbine with three-stage energy storage (flywheel, battery, hydrogen fuel cell system) dispatched by a microgrid controller.

Hatch completed the feasibility study, grid integration study and grid stability analysis, engineering, project management, and commissioning of this system, including turnkey installation of the flywheel system and a μι- grid microgrid controller.

Storage and interconnection facilities at Raglan include hydrogen fuel tanks, flywheel and substations, battery system, fuel cells, and electrolyser

Manitoba Hydro's objective was to identify transmission line routes that offered the least impact on the environment and land users

Manitoba Hydro: Pointe du Bois to Whiteshell transmission line site selection

Manitoba, Canada

In order to improve system reliability, Manitoba Hydro proposed to upgrade an existing transmission line with a new 115-kV line from the 75-MW Pointe du Bois Generating Station to the Whiteshell Station located near the community of Seven Sisters Falls, Manitoba. In preparation for the regulatory approval process, we completed a comprehensive site selection analysis as a component of the Environmental Assessment.

Due to the complexity of the study area, geographic information systems (GIS) were utilized to assess site suitability based on modeling route options from defined objectives and criteria. All criteria were based on geospatial information related to public input, ecological, social, land use, and economic values. Two alternate preliminary routes were derived, reviewed, and adjusted to support the decision to identify a preferred route for public consultation and subsequent regulatory approval submission.

Embedded power and renewable power plant integration in African and South Africa networks

Our power generation clients count on our experts to provide them with professional engineering services—as regulatory advisors, grid code advisors, network integration study specialists, design engineers for utility grid connections, balance of plant network design engineers, and owners engineers. Our years of extensive experience have earned us the trust of designers and developers. They rely on us to help them with services for embedded generator facilities, wind energy facilities, solar photovoltaic plants, and concentrated solar plants, as well as the only concentrated solar PV facility currently in operation in South Africa.

About Hatch

Whatever our clients envision, our engineers can design and build. With over six 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 9,000 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.

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