Partnering with EPCs and System Integrators for extended customer value
As companies around the globe face up to the huge challenges of navigating the energy transition, recovering from the COVID-19 pandemic and mapping out a digital future, Engineering, Procurement and Construction (EPC) companies will rely more than ever on partners that understand these challenges in the context of big global projects.

Large projects, by definition, come with risks attached – and those risks can take many forms. On top of known, managed risks, the COVID-19 pandemic has shown us that unforeseen risks – in whatever form they come – can have a huge impact.

ESG (environmental, social, and governance) is one of the most important themes of the decade for our industry. EPCs and System Integrators cannot afford to partner with companies that do not make ESG a priority.

As the world begins to recover from the COVID-19 pandemic, the only certainty is that the next unforeseen risk will be a different one – OEMs and System Integrators need to partner with the right suppliers to identify and mitigate the different risks EPCs face in their projects.

A growing number of projects in developing areas of the world means new and different project risks: EPCs know that partnering with a global leader in power grid technology minimizes those project risks.

Selecting the right partnerships to deliver lower overall project risk, with a high degree of integration, predictability and cost-efficient solutions has never been more important than now.

Scott Curley, Global Head of Channel Partners and Sales, Hitachi Energy
PARTNERING WITH EPCS AND SYSTEM INTEGRATORS FOR EXTENDED CUSTOMER VALUE

The context:

Energy and industry trends

COVID-19 hit world economies and industries hard. Global GDP fell by almost $3 trillion in 2020 as lockdowns and travel restrictions across the globe led to decreased economic and industrial activity. As oil prices dropped while commodity prices rose, the Return on Investment of projects in some industries looked hard to justify.

Many important projects, both in the oil and gas sector and elsewhere, were put on hold, as supply chain disruption also led to a shortage of many raw materials.

But with vaccination programs well underway around the world, helping drive positive economic signals, businesses are turning their attention to the big projects on the horizon.

COVID-19 has changed the world and our partners throughout the supply chain are now looking to navigate this new normal with an even sharper focus on sustainability, even stricter cost discipline and with the latest technologies to make sure they stay ahead of the game when it comes to digitalization.

Before the pandemic, governments and companies were putting in place strategies that would help them to meet the 2015 Paris aims of limiting global warming to 1.5 degrees Celsius compared to pre-industrial levels.

But the subsequent huge changes in how people around the world live, work and travel have shone an even brighter spotlight on businesses’ carbon footprint and sustainability credentials, leading to a more concerted drive toward carbon neutrality. There is a real sense of urgency – we must act now.

The rise of renewable power and energy storage present new technological challenges in the energy sector, while the electrification of other sectors of industry demands a whole new way of operating and the experience of partners that are experts in the relevant technologies.

Accelerating the process of digitalization that is already underway to drive efficiency and improve sustainability credentials, is also an important consideration for EPCs and System Integrators.

What does this mean for EPC businesses?

Reducing risk and maximizing value for end-customers as they look to fulfill future projects in a sustainable way is more important than ever. In the right hands, new processes can drive greater efficiencies.

Strategic partnerships with Hitachi Energy range from engineering and technical assistance, product supply, bundled product sets including or excluding engineering support, through to consortium and partner set-ups.

EPCs need to do more with less and will be looking to partners that can help them guarantee certainty on timing, quality and budget – more important than ever.

There can be absolutely no compromise on safety, which remains, as ever, a top priority for Hitachi Energy, and every player along the supply chain.

As projects increase in scale and complexity, collaboration and partnership are key to successful project outcomes. Ambitious projects cannot be realized without a team effort, with efficient co-operation between all stakeholders.
How can Hitachi Energy help?

Global footprint
We have worked, and continue to partner, with EPCs and System Integrators around the world, in sectors as diverse as utilities, renewables, infrastructure, mobility, industry and data centers.

Our customers appreciate our local presence in markets all around the world – it’s about relationships, but also about local regulatory and operational knowledge as well as our trusted brand.

With 36,000 employees in over 90 countries, Hitachi Energy can be a local partner anywhere and that global/local presence also gives Hitachi Energy a real stake in making sure its projects, which directly benefit communities, are successful.

Within the company, diversity of talent enriches what Hitachi Energy can offer customers. We believe that diversity is the key to great innovation, and our Diversity360 program is proof of that – we want all voices to be heard within the company, giving us the best chance of making the most of our talent.

Hitachi Energy also has a global factory network that offers unprecedented flexibility in terms of delivery options, fulfilling local codes and standards, and allowing for specific end-client preferences.

Experience
Our long history gives us a deep understanding of the challenges of executing global projects. We understand the challenges of a changing world.

Our transmission expertise and technological know-how has seen us take on ambitious projects around the world, including facilitating the world’s most powerful transmission system in China, the 3,293 kilometer Changji-Guquan 1,100 kilovolt (kV) ultra-high-voltage direct current (UHVDC) link.

We worked with China’s State Grid, supplying a huge array of technologies, including HVDC converter valves, converter transformers – among the most powerful in the world – and other high voltage components such as wall bushings, tap changers, DC circuit breakers, and capacitors as well as advanced system design support.

Hitachi Energy’s state-of-the-art transformer manufacturing and testing facility in Chongqing as well as the local HVDC engineering and technology center supported the delivery and execution of the project in the harsh environment of the Gobi Desert.

We’re much more than a transmission company: our extensive experience of working with EPCs means we know what they need: the EPC segment makes up around a fifth of our revenues.

In Abu Dhabi, we worked with Sterling and Wilson on the Noor Abu Dhabi photovoltaic plant, near Sweihan, made up of 3.2 million solar panels covering an area of 7.8 square kilometers.

The 1,177 megawatt (MW) capacity plant supplies enough emission-free power to meet the needs of 90,000 people in the city of Abu Dhabi, more than 6% of the population, and is helping the UAE meet its aim of providing 44 percent of electricity from renewable sources by 2050.

In Egypt, we worked with El-Sewedy Electric T&D to help it set up the world’s largest beet sugar factory for Dubai-based Al Khaleej Sugar Refinery’s Canal Sugar. The 900,000 ton per annum facility is set to help Egypt meet surging demand for sugar sparked by a growing population and changes in lifestyle, while minimizing environmental impact: sugar beet production uses less water than sugarcane.

Production of sugar on this scale has massive power requirements and routing that power requires efficient and reliable distribution transformers capable of meeting the complex requirements of such a factory.

To address Canal Sugar’s distinct requirements, the team designed and delivered customized distribution transformers, capable of supporting the factory’s specific environmental conditions. Innovative design features include capacity to support the high starting current of heavy-duty motors, which power the pumps.

Innovation
Hitachi Energy’s technologies are at the forefront of innovation, with leading digital systems, platforms and services which are open, manufacturer-independent and fit in with customers’ existing operations, enabling a stronger, smarter and greener grid.

We provided Woodside, Australia’s largest independent oil and gas company, with a PowerStore Battery storage system capable of remote management of operations and service, contributing to its goal of reducing carbon emissions and lowering the operating and maintenance costs of operations and maintenance.

The Goodwyn A offshore production platform, where the system is installed, is located about 135 km northwest of Karratha in Western Australia and has been operating since 1995. The production facility is more than 290 metres tall and stands in a water depth of 131 metres.

The platform combines production, re-injection, utilities and accommodation facilities. Dry gas and condensate from surrounding reservoirs are transported via a network of pipelines to Goodwyn A and then sent onshore to the Karratha Gas Plant for processing. Goodwyn A is designed for up to 50 production wells, including five re-injection wells, and has a daily production capacity of up to 36,000 tonnes of gas and 11,000 tonnes of condensate.

Recently, Linde, the world’s largest industrial gas company, required a grid integration solution to connect its new gasification plant in Singapore to the high-voltage power grid. The plant represents the biggest investment in the company’s history and when completed in 2022, will be Linde’s largest gasification plant.

Hitachi Energy provided prefabricated substations, part of our portfolio of pre-assembled skid-mounted, mobile, and containerized substations. These are designed to be pre-assembled and pre-tested in a controlled environment, ensuring lower risk and higher quality, before they are broken down and shipped to the project site for quick on-site installation and final testing and commissioning.

These modular containerized prefabricated grid and power quality solutions typically reduce project lead times by 30-40 percent. They minimize the need for civil works, shorten installation times, cut the number of interfaces between equipment and suppliers and allow for earlier energization, making for a remarkable reduction in environmental impact. This lowers the customer’s exposure to risk and creates a safer work environment by minimizing site activity.
Cooling systems are another pre-fabricated solution – they are required to be reliable and operate in all types of environments, from deserts to tropical climates, offshore and onshore.

Large consumers of direct current (DC) such as aluminium smelters and chemical processing industries use high power rectifiers with pure water cooling. Converters for different industrial areas such as oil, gas, railway systems and offshore constructions also need pure water cooling.

Cooling systems are available for all kinds of applications including nuclear power, wind power, HVDC and SVC projects, industries, medical and research applications, clean tech applications such as hydrogen production, fuel cells, battery storage and ultra-fast EV chargers.

Sustainable electric mobility is another key innovation focus area for Hitachi Energy. We provide the services and solutions that power, control and integrate e-mobility systems, from collaborative operations to remote monitoring to motion forecasting and energy management.

Grid-eMotion Flash is the world’s fastest charging technology and onboard traction system for high frequency and high capacity bus routes. Not only is it environmentally friendly, it also ensures that the fleet is not oversized to cover for electric buses on stand-by for charging. It takes less than a second to connect to overhead high-power charging contacts, and only twenty seconds to charge; allowing passengers to get on and off the bus as batteries are topped up.

The Hitachi Energy flash-charging eBus solution has been making Geneva greener since 2018. Electric buses equipped with this solution have covered a record 500,000 kilometers, transporting millions of passengers and reducing carbon emissions by about 1,000 tons.

Hitachi and Arrival have also teamed up to deliver new bus and infrastructure solutions to the European bus industry. The partners work with operators to deploy integrated end-to-end solutions that incorporate all aspects of owning and operating Arrival vehicles, including charging infrastructure and digital tools which simplify the transition to electric mobility and reduce total cost of ownership.

Partnerships
Strategic partnerships with Hitachi Energy can take many forms, including engineering support, consulting frame agreements for design studies and utility integration, product supply, provision of bundled product sets, either with or without engineering support and consortia and partnerships.

Hitachi Energy has a long heritage of strong, enduring and value-creating partnerships. We have global reach and scale, and a combined industrial heritage of almost 250 years. In the EPC domain we have worked with all the major operators on their utility, industry, transport and infrastructure projects, creating additional value through our shared partnerships.

Earlier this year Hitachi Energy was awarded a major order that will help Qatar’s national grid increase the integration of renewable energy from the country’s first large-scale solar power generation project – the 800MW Al Kharsaah photovoltaic (PV) power plant.

As part of the agreement with PowerChina Guizhou Engineering, Hitachi Energy will provide a fully engineered 220kV grid connection solution that includes detailed engineering and equipment, in line with local requirements and standards.

Al Kharsaah is key to achieving a carbon neutral power system for Qatar, by integrating renewables as outlined in the Qatar National Vision.

We are committed to working with EPCs and System Integrators, partnering with them to work toward a sustainable energy future.

In Thailand, we worked with our strategic partner RSS 2016 to provide three substations for the Royal Thai Navy Welfare Concession which provides electricity for several districts in the country, supplying a complete substation package.

We believe that the most effective solutions only come from collaboration and co-creation and the easy exchange of information among stakeholders. Today’s projects cannot be completed without a team environment – that means forming multi-stakeholder partnerships to ensure success.

This collaborative environment is one of Hitachi Energy’s core values.

As we work closely with our partners and customers to help them achieve their goals our expertise can be summed up in four key words – Safe, Smart, Sustainable and Strategic.

1. Safe

Safety, integrity and quality are our license to operate and they form part of everything we do. In a changing environment, we make health, safety, environment and sustainability our number one priority.

We strive to build safety by design into our products, along with integrated digital technologies to support start-up, maintenance and troubleshooting.

Services, which range from technical support to full installation including offloading, oil filling etc can be provided remotely or on site.

Our remote service technologies can enable the installation and commissioning of products such as Live Tank Breakers for the energization of a substation.

Not having to send a specialized team to the site makes for cost savings, while the technology provides additional health and safety guidance for on-site teams.

Our onsite installation and service teams are local, highly trained and have years of experience.
2. Smart

We are technology leaders, and we enhance EPCs’ value to their clients through our expertise in studying all aspects of power systems, integration of our technology and digital leadership. We work with our EPC customers to provide solutions that bring optimized operational efficiency and productivity to end customers.

We know that EPCs need to commit to best-in-class project execution, delivering the best value project to end customers. As the world’s largest supplier of digital substations and the digital technologies used to design them, we have the experience necessary to help achieve that.

In 2021 we launched our Smart Digital Substation offering, bringing together the latest in digital substation technology with the unique predictive, prescriptive and prognostic capabilities of Hitachi’s industry-leading Lumada Asset Performance Management solution.

By replacing copper wires with fiber optic cables, the Smart Digital Substation enables companies to reduce their carbon footprint with a smaller site and plan the next steps in their digital journey by employing digital technology and analytics in their operations today. It increases reliability, integrates new forms of cleaner energy and delivers energy services in smarter, safer, more secure ways – helping end users navigate the shift towards more distributed and less predictable renewable power generation.

We focus on technology and digital leadership to support the sustainability and future-proofing of projects, bringing together EPCs’ project execution capabilities and our own experience and application expertise to provide a compelling value proposition to end users.

For customers making investments in substations or other equipment that needs to last decades, ensuring we are at the forefront of digitalization from the start is vital.

As a provider of mission-critical power infrastructure, we play a vital role in building a more flexible, reliable and sustainable energy system. Our products and solutions, including our recently launched eco-efficient EconiQSTM portfolio, allow customers to safely and efficiently integrate ever-increasing quantities of renewable power into grids around the world, helping cities, regions and countries achieve their long-term sustainability goals and move away from fossil fuels.

Our innovative solutions also help in accelerating ramp-up in electrification across industries including such areas as buildings, infrastructure and transportation whether bus or rail networks or electric vehicle fleets, as well as the rise in energy-intensive data centers.

Energy storage is on the increase around the world and Hitachi Energy’s e-meshTM PowerStoreTM, a scalable microgrids and energy storage system, is designed to ensure reliable power availability, and grid stability together with an intelligent control system for both grid-connected and off-grid systems.

Together with our customers and partners we are co-creating flexible, resilient and sustainable solutions to progress toward carbon-neutrality: global solutions to global challenges.

3. Sustainable

At Hitachi Energy, our company’s Purpose is Powering Good for Sustainable Energy. We believe that by 2050, electricity will be the backbone of the entire energy system.

We integrate and create shared values with partners on projects: these cover responsible business practices including compliance with laws, ethics, anti-corruption commitments and data protection; fair treatment of employees and the preservation of human rights including health and safety, equal opportunities and diversity, anti-slavery and support of localization goals where required. We actively seek to manage our environmental footprint, including emissions of all kinds and develop and use eco-efficient products where possible. Our long-established commitment to sustainability is evidenced by the fact we commissioned the world’s first substation with eco-efficient gas-insulated switchgear back in 2015.

More recently, we launched our Sustainability Strategy 2030 in June 2021, committing to make our own operations carbon-neutral by 2030 and contribute to a 50% reduction in carbon emissions along the value chain, to support the broader Paris climate target of limiting global warming to 1.5 degrees.

We are working with our supply chain, our partners and our customers in the power, industry and mobility sectors to achieve this as we recognize that it is only by working together that we will make significant steps towards decarbonization.

Right across the supply chain, operators need to incorporate lower environmental impact into their design, manufacturing and construction and Hitachi Energy can help: sustainability is at the core of everything we do, providing environmentally friendly low carbon products, systems and solutions in design, execution and operation and making use of the latest digital technology to ensure our pre-assembly, construction and commissioning processes are as environmentally friendly as possible.

Our products and services are at the cutting edge of sustainability technology: we have achieved a 67% reduction in carbon dioxide emissions over the past 10 years through our HVDC transmissions and our EconiQSTM high-voltage portfolio offers a reduced environmental impact, including lower carbon dioxide emissions and no sulfur hexafluoride (SF6), superior energy efficiency performance and future-proof technology investments.

Our specific transformer solutions, designed to enable the integration of renewables, are making a big impact in real world operations: our Windstar 66 kV HVDC Light transformer enables Dogger Bank Wind Farm to power six million UK homes. And our battery energy storage solutions support the greater integration of renewables into power grids around the world.

Eco-efficiency in transformers can take different forms. With some five percent of global electrical energy attributed to transformer losses, energy efficiency has become one of the main drivers of technology evolution and regulation, with the potential to reduce energy losses by up to 60 percent.

Biodegradable ester fluid not only lowers the risk of fires from transformers, but also eliminates the environmental risks from possible spillage. Using biodegradable ester fluid also reduces the need for extensive surrounding infrastructure.

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While some noise is inevitable in several electrical products, with extensive experience and analytical design tools developed by Hitachi Energy, transformers can be configured to reduce noise by 10-15 decibels without the addition of sound barriers or enclosures.

Maximizing transformer efficiency not only puts the environment in focus but also makes financial sense. Energy-efficient design results in lower cost of ownership even before considering the initial footprint and cost reduction with reduced fire walls, oil containment systems and noise enclosure needs.

Our transformer and grid technologies are directly contributing to the drive toward carbon neutrality but we also have extensive experience of the design, digital, financing and certification processes that can help ensure sustainable growth and can use this expertise to add value for our EPC partners.

4. Strategic

Our long and varied experience in different regions of the world and different business sectors means we fully understand the risk and complexity of large projects. We work with partners throughout the supply chain to identify and mitigate the risks of delays and budget overruns.

A few recent examples include:

Supplying the main electrical infrastructure to connect sub-Saharan Africa’s largest solar project to Angola’s transmission network. The delivery includes design, main power equipment supply, testing and commissioning services.

Supporting the establishment of the new Delta Zone Regional Control Centre (RCC), which aims to improve the reliability and efficiency of the electricity network in the region and contribute to the economic development and sustainability endeavors of Egypt. The new system will monitor, control and optimize the power transmission grid to increase reliability, safety and efficiency of the energy supply for more than 26 million citizens.

Modernizing the Canal Regional Control Centre, which is used to monitor the performance of the electrical network for the seven governorates in the Suez Canal area; Ismailia, Port Said, Suez, North Sinai, South Sinai, Red Sea, and Sharqeya, serving nearly 12 million citizens.

Connecting ADNOC’s offshore operations to the onshore power grid in the UAE with a first-of-its-kind sub-sea power transmission network; enabling the transfer of cleaner and more efficient power from the mainland.

Partnering to deliver an intercontinental connection that will allow Saudi Arabia and Egypt to exchange up to 3,000 MW of power.

Hitachi Energy partners with EPCs, OEMs, System Integrators and Distributors to reduce overall project risk while providing a high degree of integration, predictability and cost-efficiency and maximizing value for end customers.

Conclusion

With sustainability goals in focus more than ever before and new technologies changing the energy and industrial landscape, Hitachi Energy is the right partner to help EPCs achieve their project goals.

At Hitachi Energy, we are committed to advancing a sustainable energy future for all. Whether you are in the utility, industry or infrastructure sector, we will partner with you to deliver innovative solutions and services that will help you ensure your next project is safe, sustainable, smart, and strategic. Together we can accelerate the energy transition towards a carbon-neutral future.

About the author and find out more

Scott Curley is globally responsible for Hitachi Energy’s channel partner sales, strategic accounts and programs. He has over 30 years of global leadership experience working with EPC’s, System Integrators, Consultants and distributors.

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