WHITE PAPER

Making the most out of OpEx: Exploiting existing infrastructure for greatest impact and returns

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Introduction

Companies across all industries share a common goal: to maximize profits by satisfying demand for their products and services at the lowest possible production costs, without sacrificing quality or integrity.

Traditionally, this has been achieved primarily through capital expenditure (CapEx). Typically viewed as long-term investments, companies gain permanent ownership of fixed assets via one-off purchases. However, more recently, global events, the rapid pace of technological development, energy prices and shifting markets have seen businesses adapt their strategy. Indeed, priorities have changed to favor operational expenditure (OpEx) as companies increasingly seek to maximize existing investments and assets. By allocating more of their budgets towards OpEx, companies can optimize their processes in a flexible way to maximize output and minimize operating costs for bottom-line benefit.

Smart servicing is often the most cost-effective way to unlock the value of existing electrical equipment. Extending asset life span and improving the performance of that asset throughout its life can significantly reduce costs and deliver a positive return on investment (ROI).

Indeed, investing in high quality maintenance and / or repair strategies for existing assets defers capital costs, and prevents operational disruptions by ensuring equipment continues to operate reliably, thus increasing ROI.

Meanwhile, modernizing existing equipment with upgrades or retrofits can vastly improve performance, enabling companies to reap the benefits of newer technologies. Integrating digital functionality into an installed base for example, empowers asset operators with the data to optimize the performance and management of individual assets or whole systems, and expounds the benefits of other OpEx investments.

Such modernization programs can also reduce both operational costs and carbon emissions and therefore helping organizations to meet environmental standards and improve their ESG (environmental, social and governance) outcomes.

To experience the greatest benefits from OpEx, companies must effectively prioritize service activities across asset lifecycles and adopt a strategic approach that focuses on achieving an outcome, such as increased uptime or energy savings, which supports their individual business strategy objectives. This requires a radical rethink of the traditional customer-service vendor relationship. Embracing truly collaborative customer-vendor partnerships – in which service partners can develop optimum regimes based on each customer's individual business objectives, needs and risks – has a crucial role to play in maximizing profits in today's fast-changing markets and ensuring long-term success, whatever the future may have in store.

This whitepaper examines the key global forces currently shaping markets and underpinning the CapEx-OpEx shift and the emergence of "as-a-Service" business models; how service activities including asset maintenance, retrofits, upgrades and equipment digitalization unlock value in and reduce the carbon impact of existing assets; and why collaborating with an experienced service partner is crucial to fully maximize OpEx ROI now and in the future.

From CapEx to OpEx: the global forces and industry pressures shaping spending decisions

Global markets are shaped by a multitude of forces, from incremental changes in consumer expectations, to sudden unforeseen events that affect supply and demand for certain commodities or services. In recent years, several key global forces greatly accelerated the existing gradual trend towards prioritizing OpEx over CapEx.

The COVID-19 pandemic sent shockwaves across the global economy, disrupting supply chains and creating labor shortages worldwide. While the pandemic's exact impacts differed by country and industry, it resulted in the most severe worldwide economic downturn in recent history.

Dramatically cutting CapEx offered one of the fastest and most substantial ways for companies to reduce costs and buffer losses. In 2020, McKinsey & Company reported that companies worldwide and across industry sectors announced capital-expenditure cuts ranging from 10 to 80 percent[1].

Despite a strong economic rebound in 2021, the effects of the pandemic still linger. During 2022, continuing lockdowns in response to COVID-19 outbreaks in China remained an impediment to global supply chains. Resulting reductions in productivity, coupled with the effects of property value weakness, slowed China's growth to just 3.3 percent in 2022, with global spillover effects[2].

Although inflation was already growing due to the rapid pandemic rebound and related supply chain constraints, it soared worldwide following Russia's invasion of Ukraine. The Russia-Ukraine war has also further exacerbated supply chain issues, and sanctions imposed on Russia have led to a steep jump in global commodity prices, particularly for energy, metals and food[3].

The resulting energy price shock and economic uncertainty have taken a heavy toll on the world economy, increasing the risk of a global recession. In the near future, high energy prices, inflation and increased interest rates are expected to continue to hamper growth[4]. The Russian invasion has also created energy supply uncertainty, with many countries and companies facing risks to their energy security.

1. Resetting capital spending in the wake of COVID-19, Brinded et al., McKinsey & Company, 2020, https://www.mckinsey.com/capabilities/operations/our-insights/resetting-capital-spending-in-the-wake-of-covid-19
2. Paying the price of war: OECD Economic Outlook Interim Report September 2022, https://www.oecd.org/economic-outlook/september-2022/
3. OECD Economic Outlook, Volume 2022, Issue 2, https://www.oecd-ilibrary.org/sites/f6da2159-en/1/3/1/index.html?itemId=/content/publication/f6da2159-en&_csp_=761d023775ff288a22ebcaaa183fbd6c&itemIGO=oecd&itemContentType=book
4. Resetting capital spending in the wake of COVID-19, Brinded et al., McKinsey & Company, 2020, https://www.mckinsey.com/capabilities/operations/our-insights/resetting-capital-spending-in-the-wake-of-covid-19

The energy trilemma

Businesses are all seeking the “holy trinity” of energy supply that is secure and reliable, affordable and clean (in that order) – but the impact of recent global events means that securing sources of supply that meet this criteria remains difficult.

The impact is stark, with a significant impact being felt globally when it comes to business confidence and strategies.

Research shows that businesses around the world remain concerned about the impacts of energy security and prices, which could be a catalyst for a range of environmental, social and economic ripple effects.

According to ABB Electrification’s Energy Insights survey[2] of 2,300 leaders from small and large businesses across a range of sectors, 92 percent of respondents feel that the continuing instability of energy is threatening their profitability and competitiveness.

Rising energy costs and insecurity are forcing business leaders to rethink how they operate and where they invest in their businesses, to grow and remain competitive. The key impacts on businesses due to rising energy costs in the last year include lower profit margins (34 percent) and cuts to spending in some areas (34 percent), leading to a shift away from investment in R&D and other business growth initiatives.

Add to this a rapidly shrinking workforce and the impact on industry is even greater. Indeed, as the current generation of energy professionals age out of the workforce at a rate faster than they are being replaced, industries around the world are competing to attract expertise from an increasingly small talent pool.

5. https://campaign.abb.com/energy-insights-report-2023

Exploiting existing infrastructure for greatest impact and returns

The answer to such challenges? Partnering with external service experts to design and deliver OpEx solutions which will help businesses meet those all-important energy trilemma objectives.

The universal challenge of navigating an inflationary environment is putting the onus on operational and facilities management teams to extend the lifecycle and productivity of existing assets. This will also help them address the mandate set by world leaders at the COP 27 climate summit – to decarbonize key industries by investing in new technologies, prolonging the life of existing equipment and changing asset management practices.

These goals can best be achieved via strategic programs of product care, including planned maintenance and repair, modernizing equipment through retrofits and upgrades, and digitalization of assets to monitor performance and predict faults – developed and undertaken with skilled service partners.

Against the backdrop of all of these challenges, it's more important than ever that industry turns to partners that can share the load, and assist companies in getting the most out of their OpEx; secure energy sources that are affordable, reliable and clean; extract optimum performance from a shrinking workforce; and establish systems and processes that allow for more efficient operations.

Maintaining a competitive advantage

Maintenance and repairs are key aspects of asset management. An effective maintenance program is crucial to mitigate the risk of equipment failure and prevent costly disruptions to production and other serious consequences. Infrequent or inadequate maintenance is a leading cause of poor equipment performance, with potential repercussions including unexpected downtime, damage to assets, and hazards to operators or community health and safety.

Incidents of asset failure can easily result in domino effects and cascading costs that far exceed asset value. Regulatory penalties, safety risks, productivity loss, legal liability, reputational damage and other indirect consequences have significant long-term impacts on the bottom line.

Maintenance and repairs become increasingly important as the installed asset base ages and equipment components begin to wear out. Proper preventative maintenance is integral to extending asset lifespan and deferring replacement costs.

Furthermore, with increased focus and pressure on energy costs, companies are putting their electrical power distribution assets under closer scrutiny. With this threat in mind, one approach that is taking hold amongst forward-thinking organizations is intelligent, preventative service and support.

Rather than seeing service as a reactive intervention, they are recognizing that running a piece of critical equipment to the point of failure could cost up to 10 times more than investing in a program of regular maintenance to extend the life cycle and productivity of electrical assets, in addition to avoiding the environmental impact of buying new equipment.

The highest levels of equipment reliability, efficiency and safety can be achieved through an advanced program of preventative maintenance, developed and undertaken in partnership with suitably experienced and skilled service professionals.

Predictive maintenance is an advanced preventative strategy where proactive maintenance actions are scheduled based on asset condition rather than according to a fixed time-based schedule. Depending on a company's digital capabilities, there are a number of options to gain an accurate understanding of the current condition and future maintenance requirements of assets.

Data can be gathered via tests measuring relevant condition indicators, or tracked in real-time through condition-monitoring smart technologies. For optimum reliability and return on OpEx, maintenance actions need to be prioritized considering the condition and risk profiles of each asset – i.e. how soon an asset is likely to fail and the consequences if it does.

Repairs are a key component of maintenance, completed as part of regular preventive routines or in response to emergencies, such as unexpected breakdowns and outages. Although effective preventative maintenance should greatly reduce the likelihood of critical equipment failure, the potential for unexpected events necessitating high-risk emergency repairs can never be entirely eliminated.

Therefore, access to expertly trained service partner technicians who can quickly, effectively, and safely perform repairs is crucial to minimize downtime and reduce OpEx costs in the long term. The availability of spare parts and other materials for planned or unplanned repairs also affects how rapidly problems can be addressed, with significant implications for uptime and asset ROI.

Planned maintenance assures productivity for LNG plant

Collaborative planning was the key to success on a massive electrical maintenance shutdown of the INPEX LNG Ichthys floating offshore facilities in the Timor Sea. When you're operating one of the world's largest offshore LNG plants, planned maintenance is key to meet production schedules and ensure greatest ROI. The project, off the north coast of Western Australia, integrates subsea extraction, a massive offshore central processing facility connected to a 59-metre wide floating production storage and offloading vessel, and an 890-kilometer pipeline to onshore processing in Darwin. Between scheduled shutdowns, it needs to work 24/7.

ABB Electrification Service was the chosen partner on the first major inspection and testing of the systems that form the electrical backbone of the extraction and offshore processing facility. The project, involving switchboard inspections, circuit board maintenance and relay testing, was set to take 30+ days and required the full focus of contractors, personnel and equipment suppliers. Planning in collaboration with reliable partners was crucial to completing necessary works within an agreed timeframe. All necessary equipment and tooling left for Darwin a month before the planned shutdown and was shipped to the floating facility ahead of the crew's arrival by helicopter.

Planning for the shutdown began in 2021 and despite COVID restrictions was conducted smoothly in mid-2022. ABB's team performed 5,200 hours on-site, running 12-hour shifts, with zero incidents.

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"Our core crew gave really good feed-back on ABB's knowledge and per-formance, and said it gave them a great deal of confidence when they were reenergizing the equipment."

Predictive maintenance for minimum downtime

ABB Electrification Service offers a comprehensive care portfolio including maintenance, repair and technical support spanning the entire asset lifecycle of electrical equipment to maximize electrical supply for improved productivity and profitability.

ABB can formulate condition-based predictive maintenance strategies by analyzing data such as asset condition, importance of the equipment and product lifecycle status alongside that from digital condition-monitoring and diagnostic systems to identify and manage problems in the electrical system before they occur.

Once collected, data is carefully analyzed and priorities are weighted using intelligent algorithms to evaluate the risks and consequences of failure. The Condition Index is based on reliability principles in current ISO and IEEE standards. A comprehensive report provides a clear, thorough and up-to-date understanding of the condition and risk profiles of electrical assets, networks and their individual components, along with a detailed risk-mitigation plan. The report identifies opportunities to improve safety, performance and efficiency, determines budget-allocation priorities and recommends the most beneficial actions. In many cases, ABB's expert service technicians can even perform minor preventative maintenance actions while undertaking assessments.

Augmented reality advancing operational performance and total cost of ownership

Augmented Reality (AR) is gathering momentum in the world of equipment servicing and is fast becoming the new norm, impacting the way in which shopfloor operatives, service technicians and engineers interact. With the impacts of energy pricing and security, the priority of industry is resilience and operators need to build an infrastructure that is resilient to all geopolitical changes and be willing to adopt and integrate new technologies, such as AR.

Unlike Virtual Reality (VR), which replaces physical reality with a computer-generated environment, AR superimposes digital information on the physical world. Through AR technology, operational information is presented in a completely new way – augmented in a person's view of their real environment and acting as a digital assistant. But crucially, AR makes digital assistance interactive, more practical to absorb, as well as easier to understand and act upon. In other words, its core capabilities are visualize, instruct and interact.

ABB pioneered two solutions to provide remote support using immersive extended reality:

1. **CLOSER** (Collaborative Operations for Electrical Systems) enables interactive troubleshooting using step-by-step tutorials, which can be accessed by customers 24/7 for fast and easily accessible guidance through the different steps of key procedures.

2. **RAISE** (Remote Assistance for Electrical Systems) takes this a step further by facilitating remotely guided repairs and replacement of critical components. In addition to using live on-screen annotations and digital overlays in the engineer's field of vision, it also allows images to be taken, as well as including an audio and video sharing capability and offering guidance via live text chat.

The speed of resolution is tangible and therefore vital in minimizing potentially highly disruptive and costly downtime.

Reaping rewards from putting AR into practice

Seeing is believing, of course, and some recent outcomes show the true value of AR. Together with ABB service experts, the field service engineers of a leading pulp and paper producer now use Microsoft HoloLens headsets imparted with AR technology containing repair strategies and guidance documentation. This means that maintenance issues that would normally result in days of downtime for travel, troubleshooting and resolution are instead solved in hours.

Additionally, one of the world's largest marine shipping operators needed remote maintenance to support problem-solving for its global fleet and reduce the impact of issues while at sea. Service support delivered through AR greatly extended the ability of onboard technicians to address failures they would have otherwise lacked the experience to diagnose and address.

ABB's experts could identify issues from thousands of miles away and provide their maintenance crews with instructions to solve problems, thereby eliminating the need for re-routes, port stops and all the associated costs.

Such AR technology is not only enabling quicker solutions to improve business continuity, it is also reducing the need for on-site visits for repairs and maintenance, minimizing costs and significantly cutting carbon emissions by as much as 60 percent.

Modernizing assets to save energy and accelerate decarbonization

One of the greatest opportunities for cost and carbon savings is modernizing assets through upgrading and retrofitting outdated electrical equipment to enhance network capabilities, benefit from advances in technology, and keep pace with evolving standards, regulatory requirements, and consumer expectations.

While modernizing electrical distribution networks sometimes requires the complete replacement of obsolete assets, in many cases equipment can be retrofitted or upgraded to achieve the desired improvements

Upgrading outdated components can reduce the cost of operating equipment by a third and extend its life cycle by as much as 30 years, which in turn minimizes the risks of breakdowns and expensive downtime. In fact, 50 percent of electrical equipment like metal cabinets, steel plates and busbars – products with high carbon footprints – can be used perpetually without being replaced if outdated components such as circuit breakers, electrical switches, fuses and contactors are regularly monitored, maintained and upgraded.

A strategic phased approach to modernization, developed and carried out in collaboration with an OEM, guarantees optimal OpEx utilization. Modernizing assets through retrofits can be implemented in stages to optimize capital expenditure over time and minimize downtime based on scheduled installations and planned maintenance. Each modernization step should tie into a company's operational priorities and advance overall business objectives.

Meanwhile, retrofit components must be mechanically and electrically compatible with the existing engineering. Upgrading power transmission and distribution systems by retrofitting state-of-the-art components can vastly improve performance without the financial burden associated with complete replacements.

In terms of best practice, early adopters are taking a preventative approach, replacing older, non-digital assets such as circuit breakers with more intelligent, sensor-enabled breakers, linked to cloud-computing platforms. These can provide real-time data and analysis on asset condition, performance and potential safety issues, helping operators prevent potential hazards before they arise and minimizing disruptions to production.

Employing advanced methodologies and extensive domain knowledge, ABB Electrification Service has partnered with electrical distribution asset owners around the world to achieve outstanding results from upgrades and retrofits. ABB is dedicated to helping companies attain maximum value from existing assets, improving productivity, reliability, efficiency, sustainability and safety.

Switchgear retrofit delivers sustainable energy solution for renewable energy leader

When two of Finland's biggest hydropower plants, located in the Arctic Circle and operated by Kemijoki Oy, wanted to upgrade their dated circuit breakers, ABB proposed and installed a retrofit solution, which avoided having to replace the entire switchgear operation.

The plants – Matarakoski completed in 1995 and Kelukoski in 2001 – have an 11 MW output and power some 10,000 family homes between them. They had been running on their original SF6-based HPA circuit breakers and despite being technically competent, the aging circuit breakers were no longer in line with Kemijoki's strict environmental diversification program.

Lack of available spare parts was also becoming an issue for breakers that had been in commission for around 30 years. Another consideration was the key part Kemijoki hydropower plays in the country's energy security and production, meaning downtime had to be kept to a minimum.

A customized 12kV version of the ABB medium-voltage VD4G vacuum circuit breaker family was specified, which clears potentially harmful short-circuit faults in tens of milliseconds, thereby preventing severe damage and lengthy plant downtime. The retrofit solution also meant downtime was reduced to hours rather than weeks, ensuring the power was kept on without any disruption.

Kemijoki Oy is a great example of an operator that is embracing the circular economy. The project demonstrates the integral role a strong servicing partnership can play in helping companies achieve their sustainability goals. The retrofit solution was achieved because of the close working relationship between ABB and Kemijoki Oy, who saw the value of bringing in an expert servicing partner to inspect, analyze and evaluate the health of their electrical equipment, before suggesting a bespoke solution.

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"Compared to a full overhaul of the complete medium voltage switch-gear, we saved almost a month of downtime with the retrofit – taking just hours rather than several weeks – and in an industry where 24/7 power output is expected, that's a lot of vital energy production and lost revenue saved."

Such partnerships can show where energy use can be optimized, or where equipment requires maintenance and simple and cost-effective fixes to lower energy consumption and reduce the risk of outages. In heavy industries such as oil and gas, or tightly controlled industrial environments such as food and beverage manufacturing, this is business critical as even a brief black-out can result in severe production losses, with devastating knock-on impacts on revenue.

Arc furnace breaker upgrade forging stronger production future for North American steel giant

As the world's leading supplier of forging die, plastic mold and die casting tool steels, processing over 200,000 tons of steel each year, Finkl Steel® was keen to address disruptive quarterly maintenance cycles and annual reconditioning of their circuit breakers that slowed production and tied up resource at their Canadian facility in Quebec.

When two of their four circuit breakers reached the end of their shelf life, it made financial sense to upgrade their electrical cabinet with just one specialized VD4-AF1 arc furnace breaker, which has much greater longevity and endurance, slashes maintenance costs and brings added technological benefits. By halving the number of circuit breakers required, the facility is also significantly reducing its waste footprint.

The upgrade solution also brings 24/7 predictive health indication and accurate synchronization with network voltage, to control accuracy and precision of the electrical current passing through the furnace, while reducing the risk of component failure and enhancing safety.

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"The ABB VD4-AF1 is capable of 150,000 operations and as we'll probably have it for at least 10 years, that equates to a decade of no maintenance. Before that it was continuous inspections, repairs, rebuilds and all the associated breakages, part costs and hours of downtime,"
Phillipe Tremblay, Project Engineer at Finkl Steel

Read more here

Digitalization enabling interconnectivity and smart automation

In the age of Big Data and Industry 4.0, more information about our assets, networks and systems can be collected than ever before. With the right analysis, this data can be used to generate valuable insights to streamline and optimize processes, enable better planning, improve efficiencies, and turbocharge productivity.

But while the vast majority of businesses recognize the benefits which digitalization can deliver, it seems many are yet to board the train to a more connected era.

In 2022, ABB commissioned a global research study which asked more than 700 key decision makers from 12 industrial sectors about their digital transformation and sustainability strategies. 96 percent agreed on the importance of digitalization and that the pandemic has accelerated most companies' digital plans, however just 35 percent of those surveyed were implementing industrial IoT at scale.

It seems therefore that many manufacturers are still missing out on the opportunities which operational data delivers. Among other benefits, digitalization facilitates advanced condition and process monitoring[6]. Accurate real-time data on equipment and operations enables more precise and intelligent process control and greater automation. Smart asset, process and energy management solutions continuously and accurately monitor performance, and can autonomously improve efficiency, predict maintenance needs, diagnose and address problems, and much more.

By empowering operators with better data, digitalization builds upon the benefits of advanced asset management, predictive maintenance and modernization strategies so companies can get more from their assets and OpEx. Maximizing the value of digitalization requires a good digital strategy, which employs a forward-thinking, outcome-focused

perspective across a company's entire asset base and operations. By using technology to enhance monitoring and control where it provides the greatest benefit, a good digital strategy feeds directly into better asset management.

Digital solutions, such as ABB Ability™ Energy & Asset Manager, which have monitoring and diagnostic capabilities, offer companies the potential to shift to a new, predictive, proactive model of maintaining their equipment. At present the norm for many companies is to let their electrical equipment run for a few years before shutting down for one or two weeks to check for any issues. But with condition-based maintenance, the equipment itself identifies if something is outside of normal parameters so issues can be addressed before they become failures.

Such an 'intelligent' approach not only makes financial sense, but also ensures that the lifetime of machinery is optimized, with equipment failures and production stoppages minimalized.

ABB Electrification Service works closely with customers to develop the right digital strategy for their unique needs, enabling them to unlock the full potential of integrating smart capabilities into electrical systems.

6. https://manufacturing-today.com/news/lets-get-digital/

Digital energy upgrade for first class Doha hotel

Among other recent digitalization projects, ABB provided The Four Seasons Hotel Doha with a smart energy upgrade. Located in the heart of Qatar's capital, the hotel's management partnered with ABB for a digital energy upgrade to improve predictive maintenance capabilities for the onsite electrical systems and optimize energy use to reduce carbon emissions.

As some of the site's air circuit breakers were approaching obsolescence, ABB's local experts worked closely with the Four Seasons' facilities team to develop an upgrade strategy for the site, providing technical support and information throughout the process. The upgrade included replacing 20 air circuit breakers with ABB's Emax 2 smart circuit breakers, retrofitting five Ekip UP devices and connecting a substation to the ABB Ability™ Energy & Asset Manager.

Following the system upgrade, The Four Seasons Hotel Doha began to use the ABB Ability™ Energy & Asset Manager, a state-of-the-art cloud solution that integrates a site's asset and energy management needs into a single dashboard. This technology enables full visibility of the electrical system's operations and provides insights to minimize risk and cost, while maximizing performance and safety. By improving overall performance, the solution can save up to 20 percent on energy bills; 40 percent on maintenance costs; and 30 percent on operational costs.

"The benefits of the ABB Ability Energy & Asset Manager proved to be a solid match with the hotel's proactive service philosophy and its comprehensive approach to the management of its sites,"
Gireesh Kumar Gopalakrishna Pillai, Chief Engineer for Four Seasons Hotel Doha

Largest hospital area in Finland modernizes its power systems to ensure mission critical uptime

Finland's largest hospital area has future-proofed its life saving power supply thanks to a modernization program with electrification partner ABB. The Meilahti Hospital Area in Helsinki, which is operated by HUS, upgraded its electrical system to maximize uptime, eliminate the use of SF6, a potent greenhouse gas, in the medium-voltage (MV) switchgear, extend the life of electrical equipment and optimize hospital operations.

ABB Ability™ Energy and Asset Manager was installed to facilitate remote monitoring and provide HUS personnel real-time information on the condition of equipment, such as temperatures, with alarms from devices alerting them instantly by text message. This level of predictive maintenance ensures early warnings of any potential failures, providing crucial information to act upon to avoid unplanned downtime.

In addition, specific condition monitoring for the MV switchgear is now available, which allows HUS to carry out maintenance when necessary, according to the actual condition of the devices. ABB's SWICOM diagnostics system reports the mechanical and electrical health status of the equipment in real-time. One SWICOM unit is enough to cover the data of the entire switchgear system. The data can be viewed – anytime, anywhere and even remotely. At HUS, SWICOM will soon be extended, allowing other equipment to also benefit.

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"With a long-standing partnership, where you know and trust the people, it's easy to discuss if there are issues and achieve a good outcome. I would recommend ABB's solutions to others, as the collaboration with ABB on our power distribution wants and needs has been excellent," Jari-Pekka Korhonen, Operations Manager for HUS Kiinteistöt Oy.

Read more here

Collaboration and service partnerships to drive new levels of operational efficiency

Markets are evolving rapidly and companies must adapt to thrive in a changing industry environment. The future of industry is a complex ecosystem involving collaborative networks of partners, assets, expertise and technologies. Going forward, the companies that gain the greatest competitive advantage from Industry 4.0 will be those willing to embrace new business models and methods of collaboration.

Smart industry is about making smarter choices across the entire business value chain – deploying the right solutions for the right challenges at the right times. Decision makers need to shift their focus from product to value and approach OpEx with a goal of investing in outcomes, rather than purchasing discrete services. This necessitates collaborating closely and transparently with trustworthy partners – sharing goals, expertise, needs and risks. Choosing the ideal service partners is integral to achieving business objectives regarding OpEx and beyond.

Subscription models and other emerging service models can play a key role in outcomes-based customer-service vendor partnerships. At the pinnacle of service agreement evolution is the concept of everything/anything-as-a-Service (XaaS), wherein vendors deliver products, services or other capabilities to customers without the customer needing to purchase permanent ownership of the enabling hardware and software.

Long-term service agreements, such as ABB's Power Care, provide a single point of contact for asset assessments, preventive maintenance, upgrades and other service needs. ABB Electrification Service supports customers with an ongoing dialogue to develop future-focused service strategies, optimizing electrical equipment value across the entire asset lifecycle.

This collaborative approach was seen when ABB partnered with one of South America's largest and oldest banks. The bank operates a world-class modern data center at its headquarters, which relies on a complex network of circuit breakers, switchboards and drives – but the bank had no preventive maintenance contract for these power components.

When the bank experienced problems with its power equipment, it led to costly shutdowns of the data center. The bank's engineering team contacted ABB to provide an understanding of what had been happening with the devices and to explore the value of a maintenance contract.

The preventive maintenance process included steps to increase the lifecycle of equipment, reduce failures and problems, and anticipate any dangerous situation in which customers could be exposed to electrical equipment, and where operations may be interrupted.

Beyond maintaining the equipment, ABB provided training for all of the bank's technical employees in maintenance techniques and developed retrofit kits for the old panels to improve the reliability of the overall electrical system. To reinforce the training, ABB's technical team conducted conference calls with the bank's information technology team, analyzing data from the center to understand how to predict potential new failures before they happen.

Since ABB implemented its preventive maintenance contract with the bank, downtime for the data center has been reduced to zero, with no failures. The center has not needed to shut down for either power problems or the maintenance process itself. The results are an end to data losses from power outages, increased reliability for the data center and improved confidence in its performance.

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"ABB's know-how made the difference in this process, creating a feeling of calm and assurance in the diagnostics process and actions."

Conclusion

Due to the influence of key global forces, including the fallout from the COVID-19 pandemic, escalating energy concerns and the Russia-Ukraine war, companies around the world continue to prioritize OpEx over CapEx. While this shift has been accelerated by turbulent markets and geopolitical uncertainty, increased focus on OpEx offers ample opportunities for companies to improve their bottom line and pave the pathway to future success by better utilizing the assets they already have.

Consequently, there needs to be a shift from traditional and often reactive crisis planning to more proactive resiliency planning, and this starts with improving the use of existing asset capacity through an all-encompassing, predictive and smart servicing approach.

Advanced predictive maintenance, well-planned modernization, and the integration of digital technologies all have key roles to play in maximizing asset ROI, extending asset lifespan, reducing lifetime costs, and vastly improving performance and avoiding emissions for better financial and ESG outcomes.

Companies can unlock significant value and opportunities by remaining open to new ideas and adopting a strategic, collaborative approach with expert service partners.

ABB Electrification Service is committed to supporting companies with an extensive range of outcome-focused service offerings to suit all electrical distribution applications. ABB is well-equipped to partner with companies on their unique transformation journeys, helping them plan optimal maintenance, modernization and digitalization investment strategies, underpinned by an in-depth understanding of assets and their lifecycles.

Click to learn more about our Electrification Service Solutions

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