FROST & SULLIVAN

BEST PRACTICES AWARDS

MITSUBISHI POWER

2020 GLOBAL DIGITALIZATION IN POWER GENERATION COMPANY OF THE YEAR AWARD

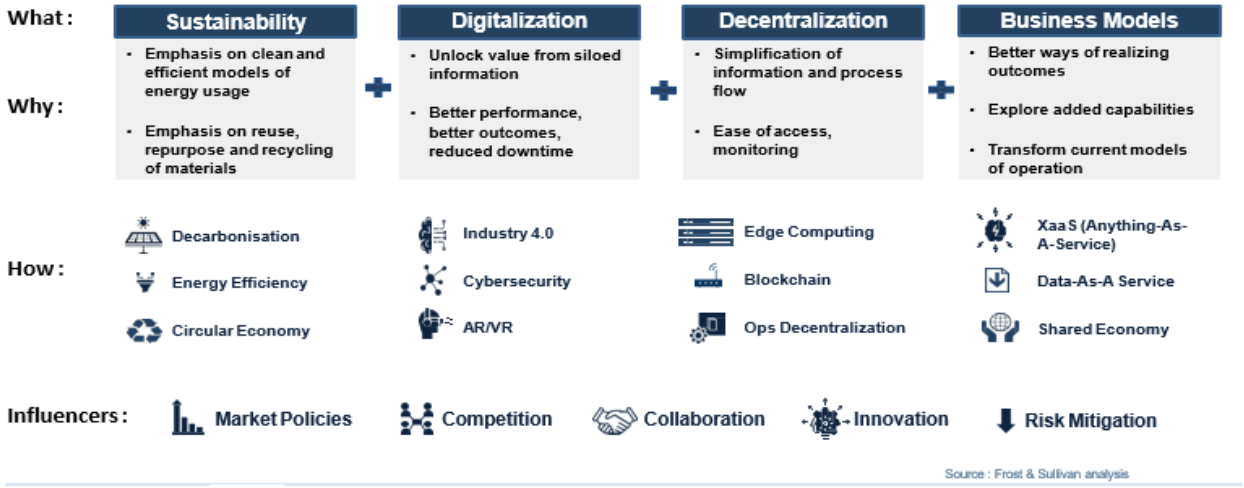
Contents

Background and Company Performance

Industry Challenges

Frost & Sullivan analysts monitor how the global conventional power industry is facing four major challenges: decarbonization, decentralization, digitalization, and the adoption of new business models (Exhibit 1).

Exhibit 1: Challenges Facing Conventional Power Plant Operators



Albeit the alternative power supply industry is embracing renewables, distributed energy, and energy storage in tandem with demand-side based business models, conventional power generation faces an uphill task to operate profitably during this period of energy transition. Conventional power plants are known for being asset-heavy and complex and, as of August 2020, the installed base of conventional power plants has reached 6,500 (3.4 terawatts (TW)) worldwide.

According to Frost & Sullivan's industrial and energy research division, the installed capacity base of utility-scale conventional power (e.g., coal and gas) is expected to reach 4TW by 2030[1]. With an average age profile of 15 years and an operating capacity margin profile of 55%, conventional power plants are increasingly stretched and experiencing a steadily diminishing operating output profile. Power plant operators are frequently forced to provide large-scale base load support to both the grid and ancillary services when necessary. Modern-day output profiles have transitioned away from steady start-up and ramp-up profiles to fast-ramp ups and flexible start-up profiles. The result is a pattern shift in operational modes, consequently affecting plants' day-to-day operation margins.

Overcoming these challenges is not an easy task due to the complex nature of the physical processes and asset types in place. Frost & Sullivan's own research in the digitalization of power generation market finds that conventional power plants need to responsively pivot to

[1] *Growth Opportunities from Decarbonization of the Global Power Sector- Forecast to 2030, Frost & Sullivan, 2020*

integrate alternative power sources. Such a capability will help plants remain profitable in the longer-term.

Achieving such physical and digital agility, thus enabling power plants to respond faster and better, requires advanced digital tools that work simultaneously with physical assets to realize either partial or total autonomy. The result is increased operational agility and efficiency. Moreover, as margins thin, digital solutions enable conventional thermal power plants to reach physical and digital agility in tandem. Consequently, better asset utilization, operational performance, and future- proofing is achieved for the smart power grid.

Visionary Innovation and Performance/Customer Impact

Mitsubishi Power is a leading global original equipment manufacturer (OEM) of power systems and offers cutting-edge technologies and energy solutions for the power industry, supporting affordable and reliable power supplies in regions throughout the world. Further, Mitsubishi Power is a key participant in creating a decarbonized, sustainable economy, helping to solve the challenges facing our global society. Founded in 1884 and headquartered in Yokohama, Japan, Mitsubishi Power has sustained two centuries of industry transformation in the global power sector and has more than 18,000 employees around the world. Mitsubishi Power, formerly Mitsubishi Hitachi Power Systems, formed a joint venture with Hitachi in 2014 to combine the two firms' power equipment solutions under the same brand. Mitsubishi Power changed its corporate name from Mitsubishi Hitachi Power Systems on 1st September 2020, became a wholly owned subsidiary of the Mitsubishi Heavy Industries (MHI) Group.

Mitsubishi Power is also an end-to-end power generation solution provider, offering a breadth of products as an OEM (i.e., state-of-the-art steam and gas turbines, boilers, environmental equipment, generators, control systems, geothermal plant, and next-generation products such as air quality control systems, aero-derivative gas turbines, hydrogen gas turbines, fuel cells, renewable energy storage solutions and, biomass fired multi-fuel boilers). The company also offers lifecycle services (i.e., full-scale engineering, procurement, construction services and plant lifecycle services and digital solutions (e.g., TOMONI$_{TM}$).

Frost & Sullivan believes that TOMONI is a particular standout for the company due to its comprehensive digital solutions portfolio driven by cutting-edge artificial intelligence (AI), machine learning (ML) algorithms, and the Internet of Things (IoT). TOMONI is quite key to the company's vision to transform the power industry by empowering total autonomous plant operations. TOMONI is carefully designed and developed to digitally upgrade conventional thermal power plants via its asset and plant-specific management software applications.

Frost & Sullivan notes that the company's track record in the power plant sector stems from experience with major projects, including T-Point 2 combined cycle power plant validation facility which was commissioned in March at Takasago Works in Hyogo Prefecture, Japan. Mitsubishi Power's footprint stretches over 1,000 units in regions

including Asia-Pacific, Europe, the Middle East, Africa, North America, and South and Central America. The company's monitoring portfolio includes more than 72 power plants and 164 turbine units spread across the globe as of August 2020.

Addressing the Needs of Conventional Power Plant Operators

The ongoing energy transition is causing a significant market shift for conventional power plant operators. The industry's fundamental role in meeting the world's electricity needs during the 20th and early 21st centuries is evolving, with the role of conventional power plants shifting from the delivery of steady output profiles to flexible output profiles. As a result, operators must ramp-up quickly to deliver flexible power while continuing to support baseload power.

Frost & Sullivan points out that this leads to a permanent shift in the needs of conventional power plant operators. Operators' present-day requirements primarily consist of:

1) The need for predictive foresight at an asset-level to better manage performance.
2) The need for operational intelligence to support responsiveness and resilience by combining captured asset-level data to predict and prescribe plants' readiness, allowing operators to ramp-up quickly to support variable demand.
3) The need to ensure end-to-end cybersecurity measures are in place at all digital entry and exit points.
4) The need to constantly update staff with new operating and monitoring procedures while ensuring health and safety precautions are being followed.

In 2017, the company launched TOMONI to overcome the aforementioned challenges. Mitsubishi Power leveraged its unparalleled knowledge and expertise in conventional thermal power to create the suite of advanced, industry-specific digital solutions. TOMONI was created in collaboration with its customers and industry partners to tackle the growing demand to enable power system flexibility and reliability for conventional power plant operators. TOMONI employs a multi-model approach of combining Big Data, statistics, and physics in tandem with top-notch operational and maintenance services (refer to Exhibit 2). Overall, the offering represents Mitsubishi Power's pioneering and path-breaking approach to pivoting customers from automation to autonomy.

TOMONI extracts inherent asset data volumes and churns them into actionable insights, allowing for continuous real-time plant operations and maintenance monitoring, simulation, and prediction analytics. With its multi-faceted execution approach, including remote operational capabilities, TOMONI increases plant reliability, reduces outage intervals, and optimizes individual plant performance and the overall plant fleet portfolio. The multi-model approach also forms a critical part of Mitsubishi Power's seven step-strategy to enable autonomy of the overall fleet portfolio (refer to Exhibit 3). While Mitsubishi Power's other competitors tend to solely use statistics and mathematical models, Frost & Sullivan recognizes how TOMONI's differentiated approach combines physics-based models with statistical and mathematical approaches to provide superior plant reliability and O&M

optimization. As TOMONI delivers precise and actionable asset-level information backed by physics and statistical models, Frost & Sullivan analysts conclude that the company is better positioned to meet industry challenges.

Exhibit 2: TOMONI's Approach to Power Plant Performance Optimization

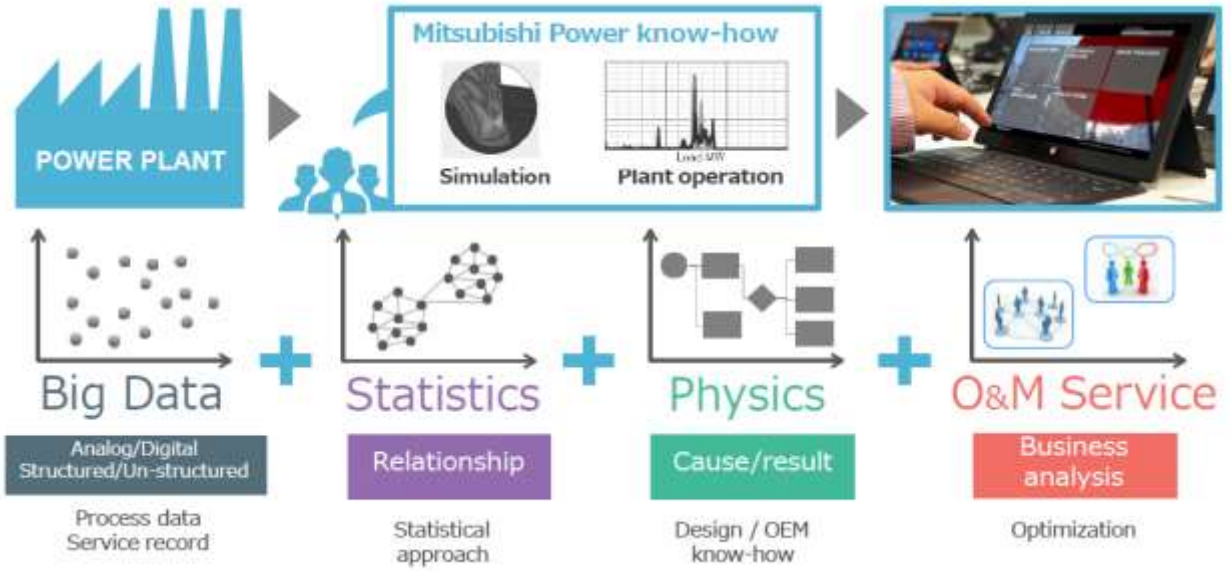
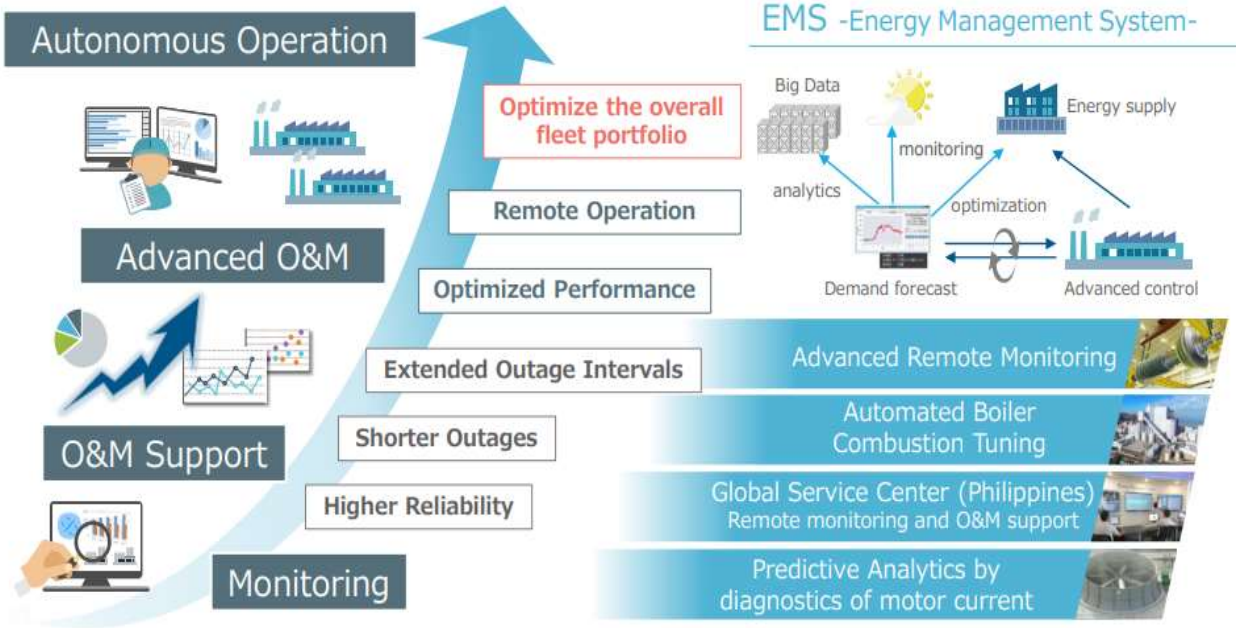


Exhibit 3: TOMONI's Roadmap to Autonomous Power Plant Operation



Best Practices Example

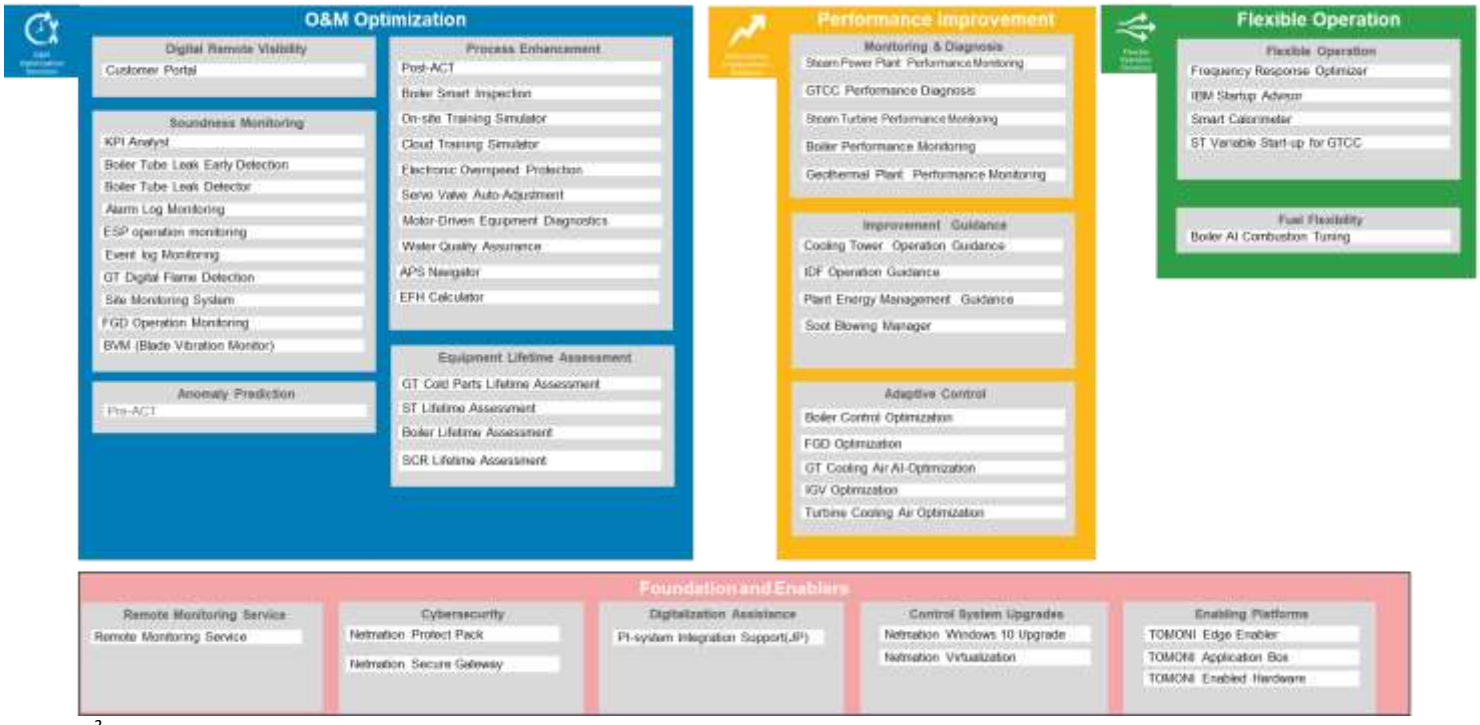
A major US-based gas power generator was experiencing decreasing plant reliability due to an increase in start/stop cycles, leading to a negative impact on the plant's financial metrics.[2] After carefully reviewing the root cause of the problem, Mitsubishi Power recommended installing TOMONI's digital flame detection solution, an innovative software-based system that mimic physical flame detection systems, to relay insights in the event of successful ignition. With its ability to detect and identify healthy ignition and relay modifications where necessary, TOMONI enabled successful plant start-ups even when issues were found with flame detectors. According to the facility's plant manager, "The plant start-up success rate improved immediately after we installed the TOMONI solution. Reliable start-ups are critical to the dispatchability of our plant. You cannot compete effectively when your ability to be online, when needed, is questioned. With this digital-based solution, we have experienced a substantial improvement in start-up reliability, which improves our profitability."

Following the implementation of TOMONI, the power plant had 337 start-ups with zero start-up trips. Furthermore, prior to recommending the solution to the client, Mitsubishi Power conducted verification testing at its T-point demonstration plant in Japan and subsequently on its in-house operating units to ensure a successful implementation.

Visionary Value Proposition

Mitsubishi Power leverages TOMONI to deliver comprehensive benefits to plant operators (Exhibit 4 below).

Exhibit 4: TOMONI's Suite of Digital Applications



[2] *Change in Power-MITSUBISHI POWER-TOMONI Digital Solutions Start-Up Reliability Case Study, Accessed by Frost & Sullivan, August 2020*

The company's offerings include:

- ***Operation and Maintenance Solutions*** which consist of predictive asset diagnosis using real-time analytics; reliability, availability, and maintenance analysis; real-time asset performance analytics and diagnosis; and maintenance interval optimization.
- ***Performance Improvement Solutions*** which consist of analytics and optimization systems for thermal combustion assets; plant asset optimization to deliver power at peak capacity; and plant asset optimization to efficiently delivery power at partial loads.
- ***Flexible Operation Solutions*** which consist of plant start-up time optimization with zero trips; plant ramp down optimization; asset operational optimization based on fuel flexibility and switching; and fast ramp up and start-up optimization to improve grid service responsiveness.

TOMONI also provides customer access to edge-level data processing through Edge Enabler, an innovative feature designed to enhance operational technology connectivity to the edge.

To support cybersecurity, TOMONI's cloud stack is hosted on Microsoft Azure, and its security management is certified by the Internal Standards Organisation (ISO/IEC27017) and National Institute of Standards and Technology Special Publication (NIST SP 800-53). Furthermore, TOMONI provides a virtual desktop, custom-built dashboard, and multi-factor authentication, ensuring efficient security management (e.g., thwarting any efforts of unauthorized logins.) With its utmost priority to plant safety and security, Mitsubishi Power extends its cybersecurity capabilities at the edge of the network, where data origination and control takes place. Moreover, the company offers 24-7 support from a dedicated security centre to further safeguard plants.

TOMONI has also set the industry standard in its ability to eliminate plant downtime and unplanned shutdowns by creating power plants that are self-healing and autonomous. The company synchronizes sensors, hardware, and software to provide real-time power plant asset health management. As a result, plant operators can gain enhanced asset control that is supported by domain expertise and informed analytics to support the smart power grid demands. TOMONI is compliant with the North American Electric Reliability Corporation, Critical Infrastructure Protection (CIP), and national security requirements.

Frost & Sullivan firmly believes that TOMONI provides a visionary and best-in-class digital value proposition that will supremely benefit conventional power plant operators by providing much-needed digital agility.

Application use cases include:

- ***Asset abnormality and prediction analysis.*** Superior abnormality detection and alerting is achieved via leveraging domain expertise and advanced sensing capabilities alongside cause and probability analysis.

- ***Condition-based asset maintenance.*** TOMONI combines sensing data with trend analysis and statistical models to extend asset inspection intervals and part life.
- ***Motor diagnostics for auxiliary equipment.*** TOMONI utilizes motor diagnostics and spectrum analysis to identify conditions such as rotor bar damage, shaft eccentricity and misalignment, stator slot abnormality, winding abnormality, and misalignment of the shaft coupling.

Best Practices Example

A leading independent power producer (IPP) in Thailand faced an inconsistent load profile from the system operator (i.e., initially commissioned to run at base load, it was later asked to run at a partial load profile.) In 2017, the plant's load profile changed again to run at higher loads, causing an impact on its profitability. Mitsubishi Power partnered with the plant operator to implement its inlet guide valve (IGV) optimization solution that would allow for smoother operations and greater responsiveness to variable load profiles. IGV, which is part of TOMONI, was installed in 2015.

However, in 2017, a more complex and future-proof strategy was required. Mitsubishi Power engineers created a digital controls strategy to further optimize the IGV closure for a wide range of load profiles, allowing the plant to handle both stable and frequent load changes. The IPP's chief operating officer relayed the following statement: "This TOMONI digital solution improved our bottom line by reducing our fuel costs and helping offset the inevitable changes that take place as a plant ages. Not only did it make our plant more efficient, but it also helps our facility fit the realities of our business in a dynamic energy marketplace without a significant capital investment for new hardware. Mitsubishi Power's technical support and the overall cost savings we achieved made this a profitable venture for our power plant." Frost & Sullivan notes Mitsubishi Power's thoughtful and well-devised strategy helped the plant achieve annual savings of $1.2 million dollars.

Maintaining World-class Standards

Frost & Sullivan's industrial and energy research spans over five decades, and its syndicated research expertise and industry interaction in the global power sector is packed with customer feedback regarding OEMs' performance standards, ranging from coal to fuel cells. Collected stakeholder feedback in the conventional power sector highlights Mitsubishi Power for its superior performance and agile lifecycle services support. End users consistently rate the company far above its competitors regarding product performance and technical support service. Furthermore, end users rate the company highly for its work ethic and resounding technical knowledge, which in some cases outshined even clients' plant technical staffs.

To achieve consistency and customer delight, Mitsubishi Power focuses on the next mission statement:

"Mitsubishi Power is creating a future that works for people and the planet by developing innovative power generation technology and solutions to enable the decarbonization of energy and deliver reliable power everywhere."

Leading the Way Toward Autonomous Power Plants

Mitsubishi Power is deeply committed to enabling power plants to reach the highest levels of autonomy, including building a fully autonomous power plant capable of self-healing. TOMONI provides much-needed flexibility for plant operators, allowing them to seize competitive energy market opportunities and remain profitable. TOMONI's proprietary and advanced capabilities differentiate it from the competition.

Key features include:

1. ***Superior Predictive Diagnosis.*** TOMONI's hardware and software suite synchronises together to alert customers in advance of an event. Notifications focus on abnormality detection and motor current diagnostics, and are followed by a cause and probability analysis conducted by Mitsubishi Power experts.

2. ***AI-based Combustion Tuning.*** Mitsubishi Power offers AI-optimized, combustion-based tuning for power plant equipment such as air heaters, air and flue gas systems, selective catalytic reduction systems, boiler systems, and coal pulveriser systems.

3. ***Plant Performance Monitoring and Diagnosis.*** TOMONI provides daily, weekly, monthly, and yearly summaries of power plant performance.

4. ***Key Performance Indicators (KPI) Analyst***. Mitsubishi Power's proprietary multi-platform application provides KPI insights for the plant's equipment and workforce.

5. ***Lifetime Assessment.*** The company continues continuous assessment of the lifetime based on plant needs.

In 2020, Mitsubishi Power commissioned the T-Point 2 combined cycle power plant validation facility entered full commercial operation with an enhanced JAC gas turbine that sets the record for output and efficiency, in Japan. The plant will leverage TOMONI's suite of digital solutions (e.g. OSI-soft's PI data management system, Microsoft's Azure cloud platform, and AI-augmented advanced pattern recognition software) and also test and validate the performance of the 1650° C-class JAC gas turbine, the company's most efficient gas turbine manufactured to date. Furthermore, work is currently underway to install advanced AI technology at T-Point 2, with the training of AI-based applications already in full swing.

Moreover, Mitsubishi Power is leveraging ML algorithms to completely automate operation and maintenance (O&M) decision making. Key benefits for TOMONI customers include AI-assisted operational recommendations, autonomous maintenance planning and scheduling, including ordering new spare parts; and increasing plants' physical and digital agility. Overall, the result is an average 2% increase in plant reliability. Frost & Sullivan research reveals that TOMONI's ability to support the complete cycle of power plant systems, including sensing, monitoring, data management, analytics and O&M, empowers end-to-end automation, thus turning a long-foreseen industry vision into a reality.

First-class Customer Impact

Since 2015, Mitsubishi Power has been leveraging TOMONI to provide customers with a best-in-class and customizable digital solutions suite. In this five-year period, TOMONI has strengthened customers' value proposition in their respective power generation markets by providing a first-class customer service and ownership experience. With its remote monitoring centres located across the world including the United States, Japan, and the Philippines, Mitsubishi Power's staff delivers exceptional technical service support to customers, thereby building trust and long-term relationships.

According to Frost & Sullivan's estimates, the potential revenue opportunity for digitalization in power generation was $1.97 billion globally in 2019 and will accelerate in the first half of the next decade. The industry is expected at a compound annual growth rate of 17.4%, owing to stakeholders' ongoing need for flexible assets, investment cost recovery, and saving unwanted maintenance costs.[3] Potential market revenue is expected to rise to $2.87 billion by 2025 due to increasing digitalization efforts[4]. Frost & Sullivan believes that Mitsubishi Power's ability to provide an autonomous digitalization solution for power generation enhances the company's brand equity and assures a leading role in the market.

With its unparalleled industry expertise strong partnerships, 24 x7 remote service capabilities, and distinctive TOMONI offering, Mitsubishi Power is creating a strong demand in a contested space. Overall, Mitsubishi Power's proven track record speaks volumes about its growth trajectory while its unwavering commitment to innovation breathes fresh air into an otherwise conventional industry.

Best Practices Example

A major Chinese gas-fired co-generation firm known for technology expertise and information technology infrastructure sought the assistance of Mitsubishi Power to maximize its dispatch rates and increase profitability. Mitsubishi Power incorporated its AI-based Pre-ACT anomaly detection solution to gather monitoring data from the plant. The company subsequently combined its fleet-wide knowledge with AI and root-cause analysis findings to eliminate unplanned downtime and avoid alarm occurrence. The plant's general manager, overwhelmed by TOMONI's successful deployment results, relayed the following feedback: "We pride ourselves on staying at the forefront of technology and innovation. Partnering with Mitsubishi Power gives us the benefit of technology that allows us to be more innovative and profitable. The Pre-ACT solution gives us advance warning of impending issues and allow us to take corrective action during a planned outage. This potentially saves us the equivalent of millions (of dollars) by avoiding unplanned downtime." Mitsubishi Power estimates that another of TOMONI's analytics solutions helped increase plant reliability by at least by 1%, resulting in $2 to $4 million dollar in savings annually.

[3] *Utility 4.0—Impact of Industrial Internet of Things (IIoT) on the Global Power Industry, 2019. (Frost & Sullivan May 2019)*

Leveraging a Powerful Brand and Value Proposition

Building on its legacy as a conventional power solutions provider, Mitsubishi Power is committed to the modern imperative of promoting decarbonization while supporting digitalization efforts for power generation utilities and IPPs. Mitsubishi Power envisions itself as a leader in the effort to decarbonize the power sector. To that end, the company created the advanced-class gas turbine designed to combust renewable hydrogen. Furthermore, the company's TOMONI offering has a powerful record of customer success, spurring digitization for plants globally. Frost & Sullivan find that Mitsubishi Power is an industry visionary and pioneer due to its unique ability to enable decarbonisation efforts and accelerate digital transformation in the power generation industry's entire technology stack.

Utilities and IPPs that have partnered with Mitsubishi Power to leverage TOMONI for their digitalization needs have exhibited an exceptional performance record, resulting in substantial efficiency improvements and operational profitability. With its proven ability to support digital agility and truly deliver on its capabilities, Mitsubishi Power sets a high industry benchmark. Moreover, the company's offerings provide a significant value-add, helping promote the long-term sustainability of power generation utilities and IPPs.

According to Frost & Sullivan analysis, conventional power generation utilities and IPPs with strong digitalization requirements should pursue partnerships with Mitsubishi Power to leverage the company's TOMONI suite of digitalization solutions. Overall, Frost & Sullivan rates Mitsubishi Power's capability to deliver optimal digitalization outcomes and high-touch customer support as far higher than other competitors, and finds TOMONI a best-in-class digitalization solution for the power generation market.

Conclusion

With $1 trillion worth of investments in distributed energy expected between 2020 and 2030, conventional power utility companies need the flexibility and reliability to accommodate the substantial increase in renewable energy generation.

TOMONI, a full-stack digital solutions suite from Mitsubishi Power, addresses this critical need with its robust, proven, and customizable suite of digital applications. With the ability to drive superior asset optimization, plant analytics, and O&M support services by leveraging artificial intelligence and machine learning-driven algorithms, Mitsubishi Power is leading the way toward enabling full autonomy for power plants.

For its best-in-class expertise, unparalleled value proposition, visionary innovation, and strong customer success track record, Mitsubishi Power earns the 2020 Frost & Sullivan Company of the Year Award.

Significance of Company of the Year

To receive the Frost & Sullivan Global Company of the Year Award requires a market participant to demonstrate excellence in growth, innovation, and leadership. This excellence typically translates into superior performance in three key areas—demand generation, brand development, and competitive positioning—that serve as the foundation of a company's future success and prepare it to deliver on the 2 factors that define the Company of the Year Award: Visionary Innovation and Performance, and Customer Impact).

Understanding Company of the Year

Driving demand, brand strength, and competitive differentiation all play critical roles in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on Visionary Innovation and Performance to enhance Customer Impact.

Key Benchmarking Criteria

For the Global Company of the Year Award, Frost & Sullivan analysts independently evaluated each factor according to the criteria identified below.

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs

Requirement: Implementing a robust process to continuously unearth customers' unmet or underserved needs, and creating the products or solutions to address them effectively.

Criterion 2: Visionary Scenarios through Mega Trends

Requirement: Incorporating long-range, macro-level scenarios into the innovation strategy, thereby enabling first-to-market growth opportunity solutions.

Criterion 3: Implementation of Best Practices

Requirement: Best-in-class strategy implementation characterized by processes, tools, or activities that generate a consistent and repeatable level of success.

Criterion 4: Blue Ocean Strategy

Requirement: Strategic focus on creating a leadership position in a potentially uncontested market space, manifested by stiff barriers to entry for competitors.

Criterion 5: Financial Performance

Requirement: Strong overall business performance in terms of revenue, revenue growth, operating margin, and other key financial metrics.

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel they are buying the optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practices criteria. The reputation and integrity of the Awards are based on close adherence to this process.

	STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	**Monitor, target, and screen**	Identify Award recipient candidates from around the world	● Conduct in-depth industry research ● Identify emerging industries ● Scan multiple regions	Pipeline of candidates that potentially meet all best practices criteria
2	**Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	● Interview thought leaders and industry practitioners ● Assess candidates' fit with best practices criteria ● Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	● Confirm best practices criteria ● Examine eligibility of all candidates ● Identify any information gaps	Detailed profiles of all ranked candidates
4	**Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	● Brainstorm ranking options ● Invite multiple perspectives on candidates' performance ● Update candidate profiles	Final prioritization of all eligible candidates and companion best practices positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	● Share findings ● Strengthen cases for candidate eligibility ● Prioritize candidates	Refined list of prioritized Award candidates
6	**Conduct global industry review**	Build consensus on Award candidates' eligibility	● Hold global team meeting to review all candidates ● Pressure-test fit with criteria ● Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7	**Perform quality check**	Develop official Award consideration materials	● Perform final performance benchmarking activities ● Write nominations ● Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8	**Reconnect with panel of industry experts**	Finalize the selection of the best practices Award recipient	● Review analysis with panel ● Build consensus ● Select recipient	Decision on which company performs best against all best practices criteria
9	**Communicate recognition**	Inform Award recipient of Award recognition	● Announce Award to the CEO ● Inspire the organization for continued success ● Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10	**Take strategic action**	Upon licensing, company is able to share Award news with stakeholders and customers	● Coordinate media outreach ● Design a marketing plan ● Assess Award's role in strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of the research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's growth team with disciplined research and best practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit http://www.frost.com.