ptc®

SOLVING ENERGY SECTOR CHALLENGES WITH DIGITAL THREAD

WHITE PAPER

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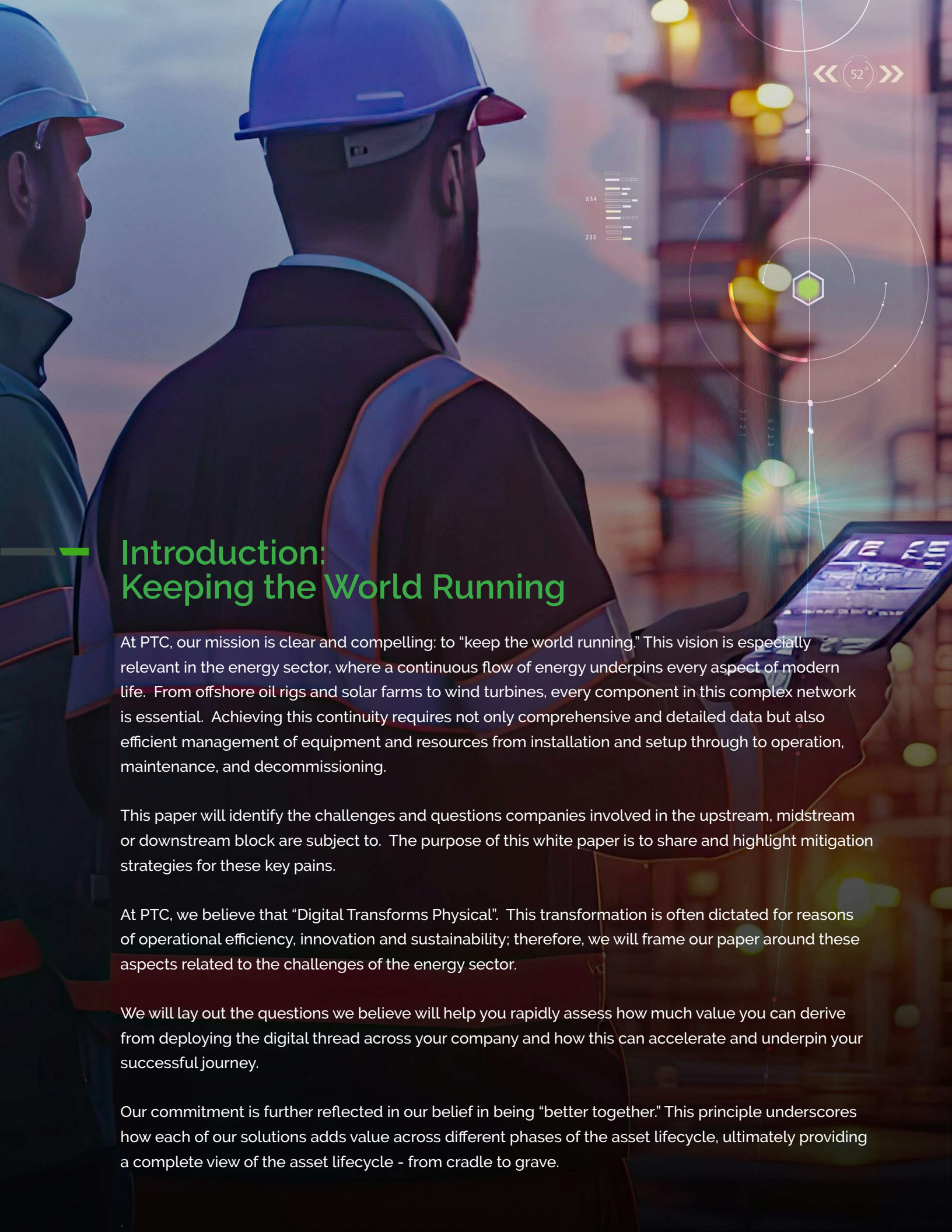

Introduction: Keeping the World Running

At PTC, our mission is clear and compelling: to "keep the world running." This vision is especially relevant in the energy sector, where a continuous flow of energy underpins every aspect of modern life. From offshore oil rigs and solar farms to wind turbines, every component in this complex network is essential. Achieving this continuity requires not only comprehensive and detailed data but also efficient management of equipment and resources from installation and setup through to operation, maintenance, and decommissioning.

This paper will identify the challenges and questions companies involved in the upstream, midstream or downstream block are subject to. The purpose of this white paper is to share and highlight mitigation strategies for these key pains.

At PTC, we believe that "Digital Transforms Physical". This transformation is often dictated for reasons of operational efficiency, innovation and sustainability; therefore, we will frame our paper around these aspects related to the challenges of the energy sector.

We will lay out the questions we believe will help you rapidly assess how much value you can derive from deploying the digital thread across your company and how this can accelerate and underpin your successful journey.

Our commitment is further reflected in our belief in being "better together." This principle underscores how each of our solutions adds value across different phases of the asset lifecycle, ultimately providing a complete view of the asset lifecycle - from cradle to grave.

Designing Products to Meet Market Demands

Feedback and analysis of data from service and operational performance metrics are crucial for continuous improvement. At PTC, we use this information to help our clients build better, safer, and more reliable products. By understanding how equipment performs in real-world conditions and identifying areas for improvement, companies can design products that are more resilient and efficient. This iterative process, supported by detailed data and feedback from the field service organization, ensures that each new generation of products is better suited to meet the demands of the market and the challenges of the future.

Using detailed data and continuous feedback, companies can refine their engineering and manufacturing processes to produce higher-quality products. This not only improves product performance and reliability but also enhances customer satisfaction and brand reputation. By building better products, companies can stay competitive in the market and address the evolving needs of their customers. Continuous improvement in product design and manufacturing leads to innovation and long-term success in the industry.

Managing Overwhelming Data Volumes

Managers of complex industrial facilities face the daunting task of handling immense volumes of data regarding the many assets that are owned by the company throughout their respective lifespans. This challenge is exemplified in the nuclear sector, where at the end of a nuclear power plant's design phase, data sets can encompass up to 25,000 documents, 35,000 requirements, 100,000 basic components, and 1.5 million technical data records. During the subsequent construction and commissioning phases, these figures can increase tenfold as highlighted in a report by Assystem. Such a vast amount of data makes the use of digital tools not merely advantageous but indispensable for managing this complexity effectively.

In the oil and gas sector, the scenario is similarly challenging. Refinery managers must continuously prepare for operational turnaround by collecting and analyzing extensive data from various sources, including equipment reliability reports, technician feedback, data files, and even X-ray scans. This constant influx of data requires meticulous organization and management to ensure operational efficiency and compliance with regulatory standards. Effective data management is critical across all phases of the energy asset lifecycle, from design and manufacturing to operation and decommissioning.

Leveraging digital tools to manage these vast data sets is not just beneficial but essential. These tools facilitate optimal engineering and manufacturing practices, precise performance metric gathering, and analysis, resulting in enhanced safety, optimal asset performance, and adherence to regulatory requirements. The transition to digital data management practices is therefore crucial for maintaining operational efficiency and achieving strategic objectives in the energy sector.

Fragmented Asset Lifecycle Management

Consider the operations of two energy companies. The first collects data sporadically, reacting to issues as they arise, which often leads to instability and disruptions. In contrast, the second company meticulously captures and analyzes data at every stage of their assets' lifecycle and from various groups within the company. This comprehensive and holistic view into the assets and jobs ensures operational stability and efficiency, enabling the company to anticipate issues before they escalate into major problems.

Comprehensive data management allows companies to integrate information from various sources, providing a holistic view of operations. This integration is crucial for identifying patterns and trends that can inform strategic decisions. By leveraging detailed data, companies can optimize asset performance, enhance maintenance practices, and improve overall operational efficiency. This proactive stance not only reduces downtime and costs but also enhances the company's ability to respond to changing market conditions and technological advancements.

Lack of Robust Asset Management/ Maintenance

Imagine a critical scenario involving a blowout preventer on an offshore drilling rig. The first company faces a crisis due to the sudden failure of this key safety device, resulting in significant safety risks and operational disruptions. Conversely, the second company employs a preventive approach. They have detailed documentation and setup procedures from installation, enabling continuous performance monitoring. This proactive analysis detects early signs of wear or potential failure, allowing for timely maintenance and the availability of necessary parts. This strategy prevents critical failures and ensures seamless operation.

Preventive asset management goes beyond just reacting to problems; it involves anticipating and mitigating risks before they occur. By utilizing real-time data and advanced analytics, companies can monitor the health of their assets continuously. This approach not only enhances safety and reliability but also extends the lifespan of equipment, reducing both capital and operational spending. Assets perform better, have longer lifespans, and require less costly ongoing preventive maintenance.

Disconnected Collaboration on Complex Projects

Large-scale energy projects involve multiple stakeholders, making effective collaboration and agility essential. Companies must ensure smooth information flow across departments to maintain project timelines and budgets. Poor organization and inadequate communication can lead to significant delays and cost overruns. By implementing digital collaboration tools, companies can enhance communication and coordination among teams, ensuring that everyone has access to the latest data and insights.

Agility in project management is crucial for adapting to changing conditions and unexpected challenges. Digital tools enable companies to track project progress in real-time, identify potential bottlenecks, and adjust as needed. This flexibility ensures that projects stay on schedule and within budget, even in the face of unforeseen obstacles. Effective collaboration and agility not only improve project outcomes but also foster a culture of innovation and continuous improvement within the organization.

Service Provider – Contract Non-Compliance

Service providers face significant challenges in ensuring accurate and timely revenue generation while managing complex service agreements between themselves and the customer. Revenue leakage often occurs due to discrepancies between the price book, quote, ticket, and invoice. These discrepancies leads to decreases in revenue, billing disputes resulting in delayed payment, and strained customer relationships, making it critical for service providers to stay contract compliant.

With a robust ticketing process in place, service providers can automate and streamline the four-way match—consistency across price book, quote, ticket, and invoice. This ensures accuracy, reducing the risk of errors and driving increased revenue and cash flow. Staying contract compliant through automated processes not only enhances revenue generation but also strengthens customer trust and satisfaction by ensuring consistency with the contract and reliability in billing processes.

Talent Shortages and Safety Concerns

Producing energy for the world requires specialized skillsets and comes with serious safety concerns. The demand for advanced technological skills and a strong safety culture is critical to safety energy production. Attracting and retaining skilled workers and continuously developing their digital capabilities are real challenges. Companies must invest in training programs that enhance employee proficiency in digital tools and technologies, ensuring that the workforce is equipped to handle the demands of modern energy operations.

A strong safety culture is essential for protecting workers and maintaining operational integrity. Companies must implement robust safety protocols and provide ongoing training to ensure that employees are educated on, adhere to, and executive best practices for designing, manufacturing, installing, operating, and servicing critical assets. This commitment to safety not only protects workers but also enhances the company's reputation and operational efficiency. By prioritizing talent acquisition, training, and safety, companies can build a skilled, motivated, and safe workforce that drives success.

Transforming Challenges into Opportunities

In an industry with tight profit margins and unpredictable challenges, running efficiently and with a comprehensive view of the asset lifecycle data is essential. Whether managing traditional energy sources or pioneering renewable technologies, capturing and utilizing detailed asset data empowers companies to transform challenges into opportunities, setting the company apart against the competition. PTC's comprehensive approach ensures a more efficient, safe, and profitable future.

Conclusion: Join Us in Keeping the World Running

PTC offers the tools and insights necessary to maintain the energy flow that powers our world. Our commitment is to help energy companies achieve their goals, meet challenges head-on, and maintain smooth, sustainable operations. Partnering with PTC means gaining access to solutions that provide a full, comprehensive view of company assets, enabling intelligent decision making based on a true picture rather than fragmented information. This comprehensive approach to data management and asset lifecycle integration ensures that energy companies are well-equipped to reduce safety, keep assets up and running, and differentiate against the competition. This enables companies by enhancing asset performance, reducing cost, driving revenue, and maximizing customer satisfaction. Join us in transforming the energy sector, working better together, and ensuring a sustainable future as we keep the world running.

Additional Information

For more information visit our **Energy Industry Solutions website** or **Contact Us** to speak to a PTC sales representative.

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