resilience. Accordingly, the desire is required to ensure organizational fundamental shift in mindset toward a growing scarcity of skilled staff, a

enjoyed. With these high costs and cost advantages that refiners and petrochemical manufacturers can calculate equipment health parameters that cannot be directly measured by sensors, enabling the identification and mitigation of potential issues before they constrain or impact performance.

Reactive and proactive advice and recommendations are provided through an online, cyber-secured streaming service with the capability to achieve plant troubleshooting and optimization objectives more efficiently and effectively.

To confirm the functionality of these types of commercially-advanced approaches, the service provider must have a high degree of technical expertise with respect to refinery operations, and battle-tested capabilities for online streaming and management of operations and maintenance data. The service provider must also have efficient, automated algorithms and technology to process the information and generate insights.

Digital twins in the cloud. The KBC Co-Pilot Program® accomplishes this by creating high-fidelity, molecular-enabled (kinetic) digital twins of refinery and petrochemical plants in the cloud (FIG. 1). The digital twin in the cloud gathers data from the plant’s distributed control systems, historians and labs, as well as from other sources such as feedstock and energy pricing. The data is constantly monitored and analyzed by deep subject matter experts (SMEs) with decades of worldwide plant troubleshooting and optimization experience to create insights for improving plant performance in real-time through highly-robust, cloud-based data sharing.

The program also provides predictive capabilities, which improve upon purely reactive approaches. The molecular-enabled, digital twin can calculate equipment health parameters that cannot be directly measured by sensors, enabling the identification and mitigation of potential issues before they constrain or impact performance.

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