

Optimizing efficiency through digitalization in chemicals, petrochemicals and refining
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Exclusive Speaker Interview



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1. Please introduce your role at Lux Research.

Yuan-Sheng Yu is a Senior Analyst at Lux Research. He leads Lux's Asia-Pacific research initiative and advises Global 1000 clients on emerging technologies. Yuan-Sheng focuses on the global energy transition and the convergence of digital technologies into the global energy system. He works with clients in implementing innovation strategies, identifying emerging opportunities, and explores strategic partnerships focusing on bridging business objectives with high-potential, disruptive technologies.

2. What does the subject of digital transformation and IoT mean to you?

Digital transformation and IoT is the future of every industry moving forward. While digital tools and IoT have been around for several years, the next era of digital transformation will revolve around the analytics and capabilities of pulling actionable insights from the large datasets that already exist and the even larger datasets that are being collected at a rapid rate.

3. What's the greatest impact IoT, data analytics and AI will have on the industry? What lies ahead of operators and how will they adapt?

The obvious answer is operational efficiency. Today we are already seeing significant improvements in efficiency and the implementation of advanced analytics and eventually AI will only make step-wise changes to the industry. One key area will be around predictive maintenance and the ability to monitor assets and deploy solutions to keep assets running.

4. How do you see the role of the Industrial Internet of Things in refining, petrochemicals & chemicals? What are the key benefits and opportunities of using IIoT solutions in downstream operations?

Regardless of what portion of the value chain, digital tools will initially focus on operational efficiency. One interesting area in downstream operations would be advanced analytics on feedstock input and product output. This has been seen in other industries where substrate inputs are quickly analyzed to determine the most optimal operating parameters and product distribution to achieve cost and energy efficiency.

5. How will this paradigm shift affect talent in manufacturing & downstream industry overall?

The fear of robotics and automation impacting the workforce is legit, however the reality is that it means the talent pool needs to evolve its skillset to complement industry 4.0 solutions rather than to outcompete it. Collaborative robotics has high potential in manufacturing and downstream applications.

6. What does workplace innovation look like at your organization?

Lux Research is undergoing its own digital transformation leveraging proprietary algorithms to enhance our ability to analyze innovation data sets and draw actionable insights.

7. How does this impact your customers?

In a world of data, our clients are overwhelmed by a flood of data sources from VC funding to patent data. Lux's advanced analytics coupled with analyst insight allow us to push the important data points to our clients rather than all the data points, allowing them to make strategic decisions faster and more accurately.

8. What are the latest technology adoptions by downstream operators in Asia? Are there any success stories that other operators can learn from?

While everyone seems to be looking to adopt digital technologies, there is still an overall lack of visibility in the specific use cases for optimizing downstream operations. One key case study is the reality modeling for brownfield refineries. Players such as Bentley Systems have created digital twins of a refiner in India to address the large issue of incompletely or inaccurate as-built drawings, which is both an operational and compliance nightmare.

9. What Does Industrie 4.0 mean for your company?

Industry 4.0 is the implementation of hardware and software innovations to advance heavy industries to a more optimized, safe, and sustainable operations. Industry 4.0 requires the deployment of existing technologies (sensors, data analytics, etc.) but also the continued development of emerging technologies (AI, edge computing, and blockchain) that have yet to truly find a value proposition beyond the hype.

10. Will Artificial Intelligence replace humans working in oil and gas?

Despite portrayal of an oil and gas operation ran by robotics and AI, the reality is that a human will also be present in some fashion. AI will only enable humans to perform at a faster and more accurate rate. One of the key areas where humans will be replaced is in offshore oil operations where robotics are controlled entirely by humans from a remote location.

11. What is the current state of cybersecurity preparedness across refining, petrochemicals and chemicals and how is the cybersecurity market set to evolve?

In general, cyber security lags compared to the deployment of IoT assets. Data shows that nearly one-third of cyberattacks today are on energy assets. Including oil and gas. Cyber security will be critical as Industry 4.0 evolves and will require both hardware and software updates.

12. Are manufacturers concerned about cybersecurity in their organization?

Lux's client base has emphasized the importance of cybersecurity in their digital solution rollouts. Currently several of Lux's clients rely on what solution providers offers, but continue to investigate key areas where they can deploy their own internal security platforms.

13. What impact does Big Data have on operational efficiency and how is Big Data changing the industry?

Big Data alone has no impact on operational efficiency. Big Data has been around for several decades and the evolution in the digital transformation is more about the advanced analytics that can be used to process large data sets. Many consider big data critical, but to this day the majority of data collected is wasted or not useful.

16. What are your views on Asia's downstream industries rate of digitalisation as compared to counterparts in other regions i.e. America, Europe and the Middle East markets?

Asia's industry has lagged behind its global counterparts to date. This is largely due to newer assets and a low-cost workforce. However, one of the big shifts in digitalization will come from China's rising position in the digital economy. We expect several Asian companies to start adopting the tools developed by China's largest digital players. Many examples can already be seen today as Alibaba is leading the charge for digitization in both Malaysia and Thailand.

17. With these radical changes looming what opportunities lie ahead for manufacturers?

As the industry changes manufacturers must seek opportunities outside of their core business. More will manufacturers turn to service-based business models for its customers.

18. What will the future workforce look like in the digital age?

The future workforce will still rely on humans. The skillset will drastically change as manual labor and other repeatable tasks are passed on to robotics. However, the human workforce will focus more on operational maintenance.



19. What will be the highlight of your presentation at Asian Downstream Summit 2018?

The presentation at ADS 2018 will focus on the rise of automation and robotics in oil and gas by looking at the solutions and technologies that are being deployed today and in the near-future in upstream operations and how lessons learned can be introduced to downstream operations.

