

**The round table panel discussion Brain Power Development Toward ASEAN FACTORI 4.0: January 18, 2023**

**Faculty of Engineering, Kasetsert University, Bangkok, Thailand**

**Round Table Speakers:**

Professor Yahoui Hamed PhD., Claude Bernard University, Lyon, France

Puttipong Kongcharoen, Thailand Industrial Standard Institute

Joseph Pattandilok, Yokogawa Thailand

Pattana Sittisombat, Chiang Rai Chamber of Commerce

**Moderator:**

Assistant Professor Santichai Wicha PhD, Mae Fah Luang University

**Purpose:**

The purpose of the external roundtable was to gather insights from industries regarding the types of graduates they required in the Industry 4.0 workforce. Several external delegates representing different organizations shared their insights on the program involving PLC and the impact of Industry 4.0 in Thailand.





## 1. In your opinion, how Industry 4.0 will affect employment in Thailand ?

Chiang Rai Chamber of Commerce emphasizes that the need of high-skilled and semi-skilled labor from new technologies reshape the employment landscape. Consequently, there is a limited space for non-skilled labor. The rapid advancement of technology demands a workforce equipped with specialized skills. This transition has resulted for non-skilled labor depletion. It is crucial to implement supportive measures that facilitate their transition into alternative sectors or equip them with the necessary skills such as social support networks. The establishment of this platform assists non-skilled labor by providing resources, training programs, and opportunities that can help bridge the gap between traditional and emerging industries.

Yokogawa-Thailand confirms that the Industry 4.0 indeed reduces the workforce, particularly for unskilled workers. Simultaneously, Industry 4.0 generates a surge in demand for jobs related to artificial intelligence (AI), advanced facility management, and a greater need for skilled labor.

## 2. What is necessary to push a rapid change in Thailand toward Industry 4.0 ?

Yokogawa-Thailand addresses the negative impact of pushing for minimum labor rates, which can have adverse effects on manufacturers. As a member of SIRI (Standardization, Innovation, and Research for Industry) and the World Forum, Yokogawa actively promotes the interests of the industry's customers. In Thailand, customers have already become aware of Yokogawa's

initiatives, and the company is committed to informing them about the areas where readiness and support are required.

Chiang Rai Chamber of Commerce mentions that upskilling the labor force is important. The lack of technology and knowledge is a significant factor that needs to be addressed. Thai government has a policy in place to upskill labor force, but there is uncertainty regarding whether the focus is on providing new technology to prepare individuals for acquiring new skills. The lack of technological know-how is a critical barrier to progress. Thai government's commitment to upskilling labor force is a positive step, but there is a need for a comprehensive approach that includes providing access to new technologies to ensure readiness for the future. The collaboration between industry, government, and educational institutions is essential to ensure that the labor force is adequately prepared for the challenges and opportunities brought by advancing technologies. Providing access to new technologies, and fostering practical and research-based learning, Thailand can cultivate a workforce that is well-equipped to navigate and contribute to the evolving industrial landscape.

Hamed comments on the role of universities in preparing students for emerging technologies. He believes that universities have a responsibility to equip students with the necessary skills and knowledge. Hamed highlights the importance of practical training and research aspects in the curriculum to ensure students are well-prepared for the skills demanded by evolving industries. Hamed's comment sheds light on the role of universities in this approach. Universities have the opportunity to shape the workforce of tomorrow by offering practical training and research opportunities. By integrating hands-on experiences and emphasizing research-oriented learning, students can develop the skills required to thrive in industries driven by emerging technologies.

### **3. Is it reasonable to have graduates capable of both ICT and Industrial ?**

In today's industrial landscape, control systems, sensors, and other critical components of industrial operations are rapidly changed. To adapt to these changes, it has become essential for everyone to possess a strong understanding of information and communication technology (ICT). Individuals at all levels of the workforce must acquire knowledge and skills in ICT to effectively navigate and contribute to the modern industrial environment. This proactive approach ensures that the workforce remains competitive, adaptable, and capable of leveraging the benefits offered by the digital age.

### **4. At the current industrial state, how long Thailand's capacity can catch up with the WEST and major cast ASIA countries ?**

PTT, SCG, and Betagro, examples of big companies in Thailand, have established themselves as major players with international standards. However, Thailand has a significant number of small and medium enterprises (SMEs) that face challenges, particularly in terms of labor availability. Catching up with the level of development seen in the West may prove to be a lengthy process for these smaller enterprises. While catching up with the West may take time, it is crucial for Thailand to prioritize the growth and development of its SMEs. By providing the necessary

support, fostering innovation, and nurturing a skilled labor force, the country can pave the way for these enterprises to gradually narrow the gap and contribute significantly to Thailand's economic progress.

**5. Based on the ASEAN FACTORi 4.0 project concept, what are additional outcomes that you expected ?**

Yokogawa-Thailand is excited to learn more about this program and believes that this program holds great potential for success. Collaborating with real users is recommended to yield highly positive outcomes and drive significant progress. Engaging with real users ensures that its solutions meet real industrial's needs.

**6. In your opinion, what is the scenario of Thailand's industrial sector in the near and far future ?**

Yokogawa-Thailand's customers express a strong desire to align with international standards. They seek to enhance their technological capabilities, implementing shop floor automation, enterprise automation, AI, machine learning, and other advancements. However, Thailand currently lacks domestic licensors in these areas, with only users benefiting from these technologies. Big companies in Thailand such as SCG conduct their own significant amount of research and development expertise. These entities are confidently creating innovative solutions and pushing the boundaries of manufacturing.

However, the challenge lies in expediting progress for small and medium-sized manufacturing enterprises. While larger entities showcase remarkable advancements, smaller manufacturers must accelerate their adoption of new technologies and processes to catch up. This acceleration will enable them to leverage the benefits of automation, digitization, and other emerging trends that drive efficiency and competitiveness.

**7. What are important Industrial Standards that need to be considered to support Thailand 4.0/Industry 4.0 ?**

The Thailand Industrial Standards Institute (TISI) emphasizes the critical importance of cybersecurity in today's connected world, and acknowledges the significance of cybersecurity measures in safeguarding automation systems. International standards such as ISO 27000 and IEC 62443 specifically address cybersecurity for automation systems that provide comprehensive guidelines and best practices to mitigate cyber risks and protect critical infrastructure from potential threats.

Through education, awareness, and compliance with these standards, businesses can proactively address cyber risks and ensure the integrity and safety of their operations. By doing so, businesses can foster a culture of security and resilience, safeguarding critical infrastructure and contributing to the overall stability and trustworthiness of Thailand's industrial sector.

**8. What are the guidelines and mechanism for the government agency to monitor and enhance the use of standards toward the industrial automation Thailand 4.0/Industry 4.0 ?**

The Thailand Industrial Standards Institute (TISI) emphasizes the use of standards as a powerful tool to promote the establishment of high-quality services and products. Through certification systems, customers can have confidence that the products or services they acquire meet the functional requirements outlined in the standards. Customers can make informed decisions, knowing that certified products or services meet the established benchmarks for performance, safety, and quality.

To ensure that workers are equipped with the necessary skills and knowledge, training programs should be implemented. These programs align the workforce with the requirements set forth by the standards, fostering a culture of competence and professionalism.

Hamed mentions the significance of incorporating the knowledge about cyber safety into the educational curriculum. Students learn how to apply and adapt these practices when they work for industries. Specifically, he highlights the importance of cybersecurity and general safety awareness, as understanding these concepts is crucial for students' future careers.

To effectively prepare students for international work environments, Thailand can implement several strategies and integrating safety and cybersecurity education into the curriculum, this approach can equip students with the knowledge and skills to navigate potential risks and challenges associated with technology and workplace safety.

For Japanese organizations, Programmable Logic Controllers (PLCs) have become a common and widely adopted technology. To meet the demands of the local market, Yokogawa-Thailand strategically has a team of 100 service engineers and 100 software programmers to provide efficient and prompt support to its customers. This localized approach allows Yokogawa-Thailand to better understand the specific needs and requirements of customers in the region. With a dedicated team of service engineers, they can quickly respond to inquiries, provide technical assistance, and ensure the smooth operation of their systems. The presence of skilled software programmers further enhances Yokogawa's ability to adapt and tailor their solutions to the local market. By combining local knowledge and expertise with Yokogawa's global experience, the company can deliver customized solutions that align with the unique requirements of customers in Thailand.

**Summary**

To gather feedback and advice from ministry stakeholders for a new curricula or center of excellence related to PLC and Industry 4.0, P04 and P05 engage in direct discussions, or meetings with them. These discussions typically involve seeking input on curriculum development, industry needs, and alignment with national or regional education priorities.

They emphasized that the changing technological landscape would require substantial upskilling and reskilling of the workforce to remain competitive and adaptable in the evolving job market.

## Advice from stakeholders :

- 1. Emphasis on Relevant Skills and Competencies :** Develop curricula that place a strong emphasis on skills and competencies directly relevant to Industry 4.0. This includes areas such as automation, robotics, data analytics, and cybersecurity. These skills are considered essential for individuals to thrive in the Fourth Industrial Revolution.
- 2. Interdisciplinary Courses :** Designing curricula that seamlessly integrate Information and Communication Technology (ICT) with industrial subjects while fostering interdisciplinary collaboration is crucial in preparing students for a rapidly evolving technological landscape.
- 3. Practical Training :** Incorporate practical training modules into the curriculum. Practical hands-on experience is crucial for students to gain a deep understanding of how Industry 4.0 technologies work in real-world applications. This hands-on training should cover the operation and programming of automation systems, robotics, data analysis tools, and cybersecurity measures.
- 4. Real-World Projects :** Include real-world projects within the curriculum. These projects should expose students to the challenges and complexities of Industry 4.0 technologies. Working on such projects can help bridge the skills gap between theoretical knowledge and practical application, preparing students for the workforce.
- 5. Agility and Adaptability :** Encourage an agile and adaptable mindset among students. In a rapidly changing technological landscape, the ability to learn and adapt to new technologies and methodologies is critical. The curriculum should foster a culture of continuous learning and innovation.
- 6. Collaboration with Industry :** Foster strong partnerships and collaborations with industry players. Engaging with industry experts can help ensure that the curriculum remains aligned with current industry needs and trends. It also opens up opportunities for internships, guest lectures, and access to real-world industry projects.
- 7. Collaboration with ASEAN countries :** Ensure that the curricula align with the ASEAN FACTORY 4.0 project concept, emphasizing compatibility and the harmonization of skills and knowledge. Cultivate partnerships and collaboration with fellow ASEAN countries to facilitate the sharing of best practices, advocate for regional standards, and establish a robust network for the exchange of knowledge and expertise.
- 8. Soft Skills :** Communication, problem-solving, teamwork, and adaptability are vital in any work environment, including Industry 4.0 settings. Integrating soft skills development into the curriculum can produce well-rounded graduates.
- 9. Innovation :** Cultivate an environment that nurtures innovation and entrepreneurial spirit within the industrial sector. Stimulate research and development efforts, advocate for the integration of cutting-edge technologies, and bolster the expansion of startups and small and medium-sized enterprises (SMEs).
- 10. Certification/Standardization :** Formulate directives, certification initiatives, and incentivizing mechanisms to motivate enterprises to embrace and adhere to pertinent standards. Promote cooperative partnerships among the government, industry stakeholders, and standardization organizations to guarantee the efficient implementation of these measures.