

**GC02: Refining and Petrochemical Processes: Essential Knowledge for People in the Chemical Industry**

This 2-day course is designed to teach fundamentals of refining, olefins and aromatics processes with the primary focus on industrial adsorbents, catalysts and reactors. The participants will learn not only theories but also hazards and safety practices associated with adsorbent and catalyst handling.

The instructor team brings more than 20 years of industrial experience in refining and petrochemical industries with industrial leaders like Honeywell UOP, Exxon Mobil, PTTGC and SCG Chemicals. Their direct experience in supervising catalyst loading activities will be greatly beneficial to participants who deal with adsorbent and catalyst on regular basis.

**Target Group:** All disciplines of engineers and any technical people who deal with adsorbents and catalysts in refining and petrochemical processes.

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**Date:** 2 Days Course - Check upcoming dates in [www.chemengedu.com](http://www.chemengedu.com)

**Time:** 9:00-17:00

**Price & Promotions:** See rate and promotions in [www.chemengedu.com](http://www.chemengedu.com)

**Venue:** Check venue in [www.chemengedu.com](http://www.chemengedu.com)

**Registration:** By Training Registration Page in [www.chemengedu.com](http://www.chemengedu.com) or contact Khun Piyarat 089 118 6531, [chemengedu.training@gmail.com](mailto:chemengedu.training@gmail.com)

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**Agenda & Course Outline:****Day 1:**

8:00 AM – 9:00 AM Register

9:00 AM – 12:00 PM

**I. Fundamental Concepts of Refining Processes**

- General overview of refining processes including MRU, CCR, FCC, chloride treaters, etc.
- Crude oil fractionation
- Catalytic reforming and isomerization
- Hydrotreating processes
- Conversion units
- Other supports units

12:00 PM – 13:00 PM Lunch Break

13:00 PM – 17:00 PM

**II. Fundamental Concepts of Olefins Production Processes**

- Non-catalytic processes (thermal cracking technology)
- Catalytic processes (dehydrogenation technology)

**III. Fundamental Concepts of Aromatics Production Processes**

- Typical aromatics production processes
- Catalytic units
- Non-Catalytic units

**Day 2:**

8:00 AM – 9:00 AM Register

9:00 AM – 12:00 PM

**IV. Industrial Catalytic Reactors and Catalysts**

- Types and functions of reactors
- Fixed bed reactor
- Moving bed reactor
- Fluidized bed reactor
- Slurry/Ebullated bed reactor
- Overview of catalyst types and functions
- Catalyst regeneration and replacement cycle consideration
- Process technology related issues for catalyst handling

12:00 PM – 13:00 PM Lunch Break

13:00 PM – 17:00 PM

**V. Industrial Adsorbents**

- Adsorbents in Refining Process
- Adsorbents in Olefins Production Process
- Adsorbents in Aromatics Process
- Adsorbent regeneration and replacement cycle considerations
- Process technology related issues for adsorbent handling

**VI. Potential hazards & chemicals and safety related to catalyst/adsorbent handling in refining & petrochemical applications**

- Catalyst/adsorbent unloading
- Catalyst/adsorbent loading

## Your Instructor:

### 1. Mr. Wiroon Tanthapanichakoon,

- Senior licensed chemical engineer in Thailand, license no. 155
- Committee of Engineering Institute of Thailand in Chemical and Petrochemical, license no. 2/043447

### Qualifications:

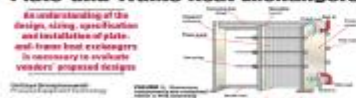
- **Managing Director and Technology Director of Global R&D Co. Ltd. ([www.globalrd.co.th](http://www.globalrd.co.th))**
- **The founder of online chemical & engineering education platform: [www.chemengedu.com](http://www.chemengedu.com), [www.facebook.com/chemengedu2015](http://www.facebook.com/chemengedu2015)**
- **Invited lecturers and instructors for various technical seminars by providing over 100+ courses for > 130+ organizations and > 1500+ engineers in Thailand and other countries proven by 50% participants are the repeating customers.**
- Bachelor and Master degrees in Chemical Engineering from Kyoto University, Japan
- >10-year experience in a refinery of a global oil company and an ethylene plant of a leading Thai petrochemical company with direct experience in process and equipment design
- 1-year work experience in USA in a technology team of a well-known US technology licensor, GTC Technology US LLC
- A member of Elsevier Editorial Board in Process and Plant Design (2014-2015) and an advisory board member of International Association of Certified Practicing Engineers (IACPE) (2015-2016)
- A Senior Member of American Institute of Chemical Engineers (AIChE)
- One of the first Thai chemical engineers to have published articles in 3 renowned chemical engineering monthly magazines in the US – i.e. *Chemical Engineering Progress* (by AIChE), *Chemical Engineering Magazine*, *Hydrocarbon Processing*
- Holds several papers on Sciencedirect and technology patents
- Presented papers at AIChE 2006 Fall Meeting and was the first engineer of his Thai leading company to present technical knowledge at AIChE 2015 Spring Meeting: Ethylene Producers' Conference
- Wiroon's technology co-development & scale-up experience with renowned experts:



### Accelerating Process and Product Development

These simple strategies can be used to speed up and increase the success ratio of R&D projects

### Unlocking the Secrets of Plate-and-Frame Heat Exchangers



### Saving Energy in Multilevel Steam Systems



- Professional Licensed Engineer & Senior Member of AIChE
- Member of Elsevier Editorial Board in Process Plant Design (2014-2015)
- International Association of Certified Practicing Engineers (IACPE): A Member of Advisory Board
- Speaker at AIChE Ethylene Producers' Conference



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## 2. Mr. Nattapong Pongboot

### Professional Summary

Nattapong is an experienced chemical engineer with expertise in chemical engineering and refining technologies. He is now part of Honeywell UOP's Field Operating Services (FOS) team with primary focus on hydroprocessing technology. As a Senior Process Advisor, he provides technical support of new process unit start-ups, turnarounds, revamps, troubleshooting and optimization across a range of refining and petrochemical technologies around the globe.

Prior to Honeywell UOP, he spent 8 years serving various roles in refining and petrochemical industry in Thailand with most of his time in major companies like PTT Global Chemical and SCG Chemicals.

### Work Experience

**- Senior Process Advisor**, Honeywell UOP, Kuala Lumpur, Malaysia

*October 2019 – Present*

Responsibilities: Being part of UOP's Field Operating Services (FOS) team with primary focus on hydroprocessing technology. He travels around the globe to customer sites and provide technical support of new process unit start-ups, turnarounds, revamps, troubleshooting and optimization across a range of refining and petrochemical technologies.

**- Lead Process Technology Engineer**, SCG Chemicals, Rayong, Thailand

*March 2019 – August 2019*

Responsibilities: Techno-economic study of various technologies including FCC-based naphtha cracker, mixed C4s value adding and crude to chemicals.

**- Hydrocracker Unit Engineer**, PTT Global Chemical, Rayong, Thailand

*January 2016 – February 2019*

Responsibilities: Plant operation, plant improvement, equipment inspection and modeling/simulation

Key achievements:

- Initiated an idea to utilize low cost hydrogen within PTTGC to improve volume expansion from both diesel hydrotreater and hydrocracker by reevaluating sulfur target of diesel product and catalyst selection strategy. He was an integral part of this transformation with estimated margin uplift of 20+ MM\$/year.
- Developed an effective fractionator tuning technique to improve cetane number of diesel product along with blending technique to improve sales volume of premium diesel by 50%.
- First Hydrocracker Unit Engineer who implemented pilot plant test for hydrocracking catalyst selection with execution package and interpretation methodology developed. This practice will be the new standard for modern hydrocracking catalyst selection in PTTGC.
- Debottlenecked hydrocracker fractionator so it can additionally recover 2% more heavy naphtha (if required).
- Lead designer of CDU overhead compressor debottleneck, estimated fuel saving by 2%.