

Respecting Design Limits: The Hidden Risk Between Operation and Materials

Physical Technical Talk

BEM Approved CPD/PDP Hours: 2
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SPEAKER:

Ir. Anwar Ahmad

Registration Fees
IEM Students : Free
IEM Members : RM 15
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**19
SEPT
2026**

09:00AM – 11.00AM

**WISMA IEM,
PETALING JAYA, SELANGOR**

SYNOPSIS

In the processing facilities, many integrity failures do not arise from sudden events, but from gradual and often unnoticed misalignment between operating practices, process design limits, and material capabilities. This talk examines the hidden risks that develop when facilities operate beyond—or too close to—their original design envelopes, whether due to production optimization, life-extension initiatives, or changing fluid characteristics.

Through practical industry examples, the presentation highlights how variations in pressure, temperature, flow regime, and fluid composition can undermine original material selection and design assumptions. Such deviations may activate degradation mechanisms including corrosion, erosion, fatigue, hydrogen damage, and stress corrosion cracking, ultimately threatening safety, reliability, and asset life.

The session emphasizes the critical interface between process engineering, operations, and materials disciplines, where gaps in understanding or communication can allow small operational changes to evolve into major integrity risks. It underscores the importance of clearly defined operating limits, respect for design margins, and disciplined management of change supported by effective monitoring and integrity assurance.

Attendees will gain insights into recognizing early warning signs of operation–material mismatch and embedding design-limit awareness into daily operational decision-making to ensure safe, reliable, and sustainable asset performance throughout the facility life cycle.



SPEAKER'S PROFILE

Ir. Anwar Ahmad is a registered Professional Engineer with Practising Certificate (PEPC) with the Board of Engineers Malaysia (BEM), Chartered Engineer with the Engineering Council, UK, and Corporate Member of both The Institution of Engineers, Malaysia (IEM) and the Institution of Chemical Engineers (IChemE), UK.

With more than 20 years of experience in process engineering for oil & gas and processing facilities, he has extensive expertise in process design, simulation, equipment sizing, safety studies, and facility optimisation. His technical experience includes the development of PFDs, UFDs, P&IDs, heat and material balance, hydraulic calculations, relief and blowdown analysis, as well as process safety studies including HAZOP and SIL workshops.

He is proficient in various engineering simulation and design tools, including HYSYS, Petro-SIM, VMGSim/iCON, HTRI, FlareNet, Aspen Flare System Analyzer, and FlareSim. He is also well-versed in international and industry standards such as API, ASTM, PETRONAS PTS, Shell DEP, and Iranian Petroleum Standards.

Beyond greenfield design projects, Ir. Anwar has significant experience in plant modification and revamp projects, focusing on improving operability, constructability, maintainability, reliability, and safety performance to ensure facilities operate safely and efficiently under evolving conditions.

