



IHS EMEA AROMATICS & OLEFINS CONFERENCE

Introduction to the Olefins Business: Technology, Markets & Economics

Monday, June 13, 2016

8:30 am – 5:00 pm

This full-day workshop is a good primer for industry newcomers and those needing a refresher in the olefins business. It will break down and explain petrochemical feedstocks, new production technology, markets and economics of the olefins businesses in easy-to-understand terms.

This course will cover ethylene, propylene, and the C4 olefins (butadiene, n-butenes, isobutylene) – chemical structures, physical form, sources, logistic issues, trade balances, key players, and value chains, as well as olefins technology including crude to chemicals, catalytic cracking of ethane/methane and MTO/CTO.

MORNING SESSION

Understanding Petrochemical Feedstocks

- Natural gas – including an extensive discussion of shale gas. Learn about the concept of “stranded” gas and how this has created pockets of regional advantage in the olefins business
- Natural gas liquids (NGLs) – ethane, propane, butanes, condensates – each with their own uses and price drivers – learn how all of this impacts the petrochemical industry
- Oil – naphtha, middle distillates, heavy oil – extensive discussion about how refining intersects with petrochemicals and the benefits of refinery/petrochemical integration
- Coal – learn how China is leveraging cheap coal using old historical processes but also innovating new approaches as well
- Renewables – will bio-based routes to “petrochemicals” make an impact?

Introduction to the Olefins Business

Introducing ethylene, propylene, and the C4 olefins (butadiene, n-butenes, isobutylene) – chemical structures, physical form, sources, logistic issues, trade balances, key players, and value chains

Ethylene – The Largest of the Building Blocks

- Steam Cracking – a detailed look at the “heart and soul” of the petrochemical industry.
- Direct Crude Oil Cracking – advantages/disadvantages
- Coal to Olefins (CTO)/Methanol to Olefins (MTO) - Finally commercial! Is this a game-changer? Will MTO grow outside of China?
- “Green” Ethylene from Bioethanol
- Direct Methane Coupling – “The Holy Grail”

AFTERNOON SESSION

Ethylene Economics

Cost of production methodology – learn how costs are built-up in the petrochemical industry. A case study comparing the costs of an ethane cracker versus a naphtha cracker is presented. Regional costs are compared over the 20 years. The concept of cost curves is introduced and a global cost curve for ethylene production is presented and discussed.

Propylene – The Second Largest Building Block, but the Fastest Growing Olefin

- Unlike ethylene, three grades: polymer grade, chemical grade, and refinery grade
- Steam cracker co-product – the largest source, but shale gas causing a reduction – learn why
- Propylene from FCC units – refineries coming to the rescue
- Enhanced or High Olefin FCC
- On-purpose propylene (OPP) technologies:
 - Propane dehydrogenation
 - Olefin metathesis
 - Methanol to Propylene (MTP)

Propylene Economics – Propylene for the most part is a by-product. This feature complicates the methodologies used to assign costs to propylene. Various approaches will be discussed and illustrated.

The C4 Olefins – Butadiene, Butene-1, Butene-2, and Isobutylene

- Refinery based C4s
- Steam cracker C4s
- C4 disposition – recycle co-crack or separate for chemical use
- Separating the C4's – not straightforward, must use our “bag of tricks” – learn how and understand what raffinate-1 and raffinate-2 are all about
- Butadiene – steam cracker by-product, but once again shale gas is hurting this source. Will on-purpose butadiene technology proliferate?
- n-Butenes (butene-1/butene-2) and isobutylene – from both steam crackers and FCC units -competing with gasoline use
- Butadiene economic