

# Sulfur-free emission start-up process for gasification reactors

## Executive summary

Emission of sulfur compounds contained in gas flared during the start-up of gasification plants using coal, oil, petroleum coke or other sulfur-containing feedstocks can be problematic from an environmental, regulatory and permitting standpoint. Driving factors include tighter restrictions on total sulfur emissions; increased scrutiny of the frequency, duration, and thus legitimacy of start-up/shutdown/malfunction exemptions; the required permitting of start-up and shutdown emission; and absolute limits on instantaneous emission concentrations, regardless of the reason for the emissions. The larger size and number of gasifiers now considered for world scale gasification complexes has also increased in absolute terms the magnitude of start-up emissions.

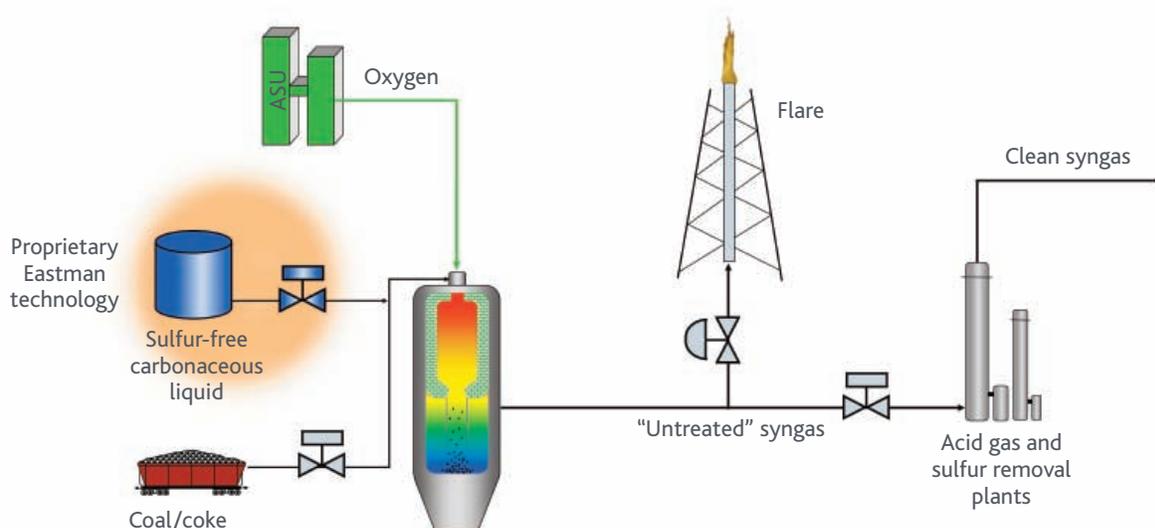
In response, Eastman proactively developed a patented process that essentially eliminates start-up activity sulfur emissions. Eastman has utilized the Sulfur-Free Start-up process at its Kingsport gasification facilities for over 10 years, and is now willing to consider licensing its patent rights and associated know-how for this technology to selected projects.

## Technology description

Traditionally, the raw, sulfur-containing gas produced during the start-up of a gasification plant is flared until the downstream clean-up and recovery plants are started. This procedure allows for a safe, controlled start-up of the process, but results in excess levels of sulfur emissions.

Drawing on its 25 years of experience operating the nation's most reliable coal gasification facility, Eastman developed and patented a process that virtually eliminates start-up-related sulfur emissions. Eastman's approach involves starting the gasification units and downstream plants on a sulfur-free, carbonaceous liquid feedstock such as propanol, methanol, or a mixture of methanol and water, resulting in a flare without sulfur emissions.

Once the downstream plants are adequately pressurized and brought on-line, the feed is switched to coal slurry or other sulfur-bearing feedstock on the same feed injector. This changeover is accomplished while maintaining pressure and without interruption to the feed.



## Intellectual property portfolio

- US Patent No. 6,033,447: Start-Up Process for a Gasification Reactor
- Associated design information, including P&ID, PFD, HMB information, key equipment and instrument details, safety narrative, and vendor selection specifics
- Operating narrative recommended by Eastman for start-up on alcohol and switching to slurry feed
- On-site start-up procedure training of key licensee personnel at Eastman's gasification facility in Kingsport, TN
- Limited consultation by Eastman gasification experts during technology transfer and commissioning

## Other technology and service offerings

- Eastman offers the benefits of 25 years of industry-leading coal gasification operating experience and know-how. We can help maximize the value creation and performance of your gasification investment and make it your preferred power, chemicals, or fuels production option. Our focus is on partnering with gasification developers and/or owners to create strong opportunities for chemical co-production or polygeneration. Preferred projects are those having solid financials, competitively advantaged feedstocks, and superior inbound/outbound logistics. If you are involved in such a gasification project and believe it could provide significant mutual benefits, please contact us.
- Eastman's Technology Licensing and Alliances group focuses on the licensing, sale, donation, and disposition of intellectual capital for the enterprise. The scope of our offerings can begin with the simplistic granting of rights from the Eastman patent portfolio and progress through the transfer of proprietary skills, design specifications, and knowledge captured in our confidential know-how.

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# EASTMAN

### For more information:

#### Technology Licensing and Alliances

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