



Technology Fact Sheet

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Lummus Ethylene Technology used by CJSC Vostochnaya Neftechimicheskaya (VNHK) in Russia

- Owner:** CJSC Vostochnaya Neftechimicheskaya (VNHK), a fully owned subsidiary of OJSC Rosneft Oil Company
- Location:** Nakhodka, Primorsky Region, Russia
- Process:** Ethylene technology
- Capacity:** 1.4 million MTA ethylene and 600,000 MTA of propylene. This will be the world's largest steam cracker by volume.
- Production:** Polymer-grade ethylene and propylene
- Technology:** SRT-VII® Pyrolysis Furnace Module and Ethylene Recovery Technology
- The unit will utilize the highly selective SRT®-VII pyrolysis heaters to minimize naphtha feed consumption, increase overall plant efficiency and reduce greenhouse gases. The plant's recovery section will utilize Lummus Technology's proven recovery technology leading to high on-stream time.
- Description:** The SRT® Short Residence Time pyrolysis furnace technology has over 40 years of proven experience on feedstocks ranging from ethane through vacuum gas oil. Lummus has executed combinations of design, construction and start-up of more than 1000 SRT furnaces. This achievement is further supported by Lummus' overall SRT experience, which includes more than 1000 furnaces. Lummus SRT furnace provides high selectivity, long run lengths and high on-stream time.
- CB&I Advantage:** Plants that use SRT technology currently represent about 40% of worldwide ethylene capacity. In the last decade, Lummus has built and commissioned more ethylene cracking furnaces than any other process licensor. The SRT technology consistently achieves designed capacity, meets yield guarantees, and operates for long run lengths (greater than 50 days) between coil decokings.

Lummus Technology's recovery and purification technology incorporates a unique recovery sequence and hydrogenation technology that improves energy efficiency, increases reliability and reduces investment.

Benefits:

FEATURES	BENEFITS
Radiant coil design: <ul style="list-style-type: none"> ■ Small inlet tubes ■ Large outlet tubes 	<ul style="list-style-type: none"> ■ Higher selectivity to olefins ■ High capacity per coil ■ Long run length ■ Simple mechanical design
Low NOx burners	Reduces emissions
DPG Selective Hydrogenation	<ul style="list-style-type: none"> ■ Hydrogenates dienes and styrenic compounds ■ Optimizes products suitable for gasoline blending

About VNHK

CJSC (VHHK), a fully owned subsidiary of OJSC Rosneft Oil Company, was established in 2011 for the realization of Rosneft's petrochemical production in Russia's Primorsky region near the Pervostroiteley settlement of the Nakhodka city district. The enterprise will be engaged in polymers production and will produce a range of other petrochemical products. As part of the project, a specialized sea terminal near Vostochny port is planned for shipment of the finished products.

About CB&I

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