

BEHIND THE SCENES at the Sturgeon Refinery



“When we started this journey we purposely chose environmentally-leading technology to produce the lowest carbon intensive fuel from bitumen. That’s our commitment to the province, its citizens, our local communities, and our owners. The majority of the Sturgeon Refinery is highly reliable, producing diesel from synthetic crude oil. However, challenges with the Gasifier have delayed processing bitumen. The delays are disappointing for all of us. Our team remains committed to resolving these issues and fulfilling our promise to maximize the value of Alberta’s bitumen.” - Kerry Margetts, President, North West Redwater Partnership



Sturgeon Refinery Tackles Challenges, Committed to Path Forward

The energy sector is one of Alberta’s best assets, and the Sturgeon Refinery is building on that strength. As the first new greenfield refinery in Canada since the 1980s, the refinery takes advantage of the exponential growth in technology over the past several decades. It’s the first refinery designed from the outset to capture its carbon emissions, which will result in one of the lowest carbon intensive fuels from Alberta’s bitumen.

Reliable and Safe Operations in Majority of Units

Over the past few years, the Sturgeon Refinery progressed through construction, commissioning, and start up in most of its ten units. With these units successfully operating, the refinery has been producing low sulphur diesel from synthetic crude oil for Western Canadian and export markets for over a year.

These units have been highly reliable and operating safely. Both the facility and operations team have proven their ability to run these units successfully. Unplanned down time has been minimal while production rates exceed expectations using synthetic crude oil feedstock instead of bitumen.

Complex Systems Bring Unforeseen Hurdles

Despite this success, the refinery is not yet able to refine bitumen feedstock, for which it is designed, because the Gasifier is still not operating.

The Gasifier is a critical unit. It provides environmental benefits by reducing the carbon footprint of fuels produced from bitumen. This unit will process the heaviest bottoms of the bitumen barrel and convert those bottoms into valuable hydrogen, which is needed for the refining process. The Gasifier will also produce pure CO₂, which will be captured and used for enhanced oil recovery, resulting in one of the lowest carbon intensive diesel fuels.



The new reactor burners will be installed inside this portion of the Gasifier to complete final testing.

With complex innovation come expected and unexpected challenges. Early in the commissioning phase of the Gasifier, it operated for a brief period to produce hydrogen and pure CO₂. However, multiple issues arose shortly after, delaying full commissioning and start-up of this unit. This includes shorter than expected lifespan of the reactor burners, which are part of the high temperature process that breaks down bitumen, and stress cracking in portions of the stainless steel piping and welds.

Team Committed to Path Forward

The Sturgeon Refinery team is working with the company who designed the Gasifier, along with additional engineering and construction experts to resolve these challenges. The reactor burners have been redesigned and are ready for final testing. Focus is now on repairing the damaged piping. A team of staff and contractors from an experienced local construction company have been assembled. Several hundred people are working diligently to complete the repair work on the pipes safely.

There is a solution and path forward, but unfortunately the result is a further delay in switching the refinery feedstock from synthetic crude oil to bitumen. Based on challenges experienced to date, a full inspection of the Gasifier is underway. Full commercial operation is targeted by the end of 2019, assuming any new unexpected challenges are overcome without causing added delays.

Knowing the Sturgeon Refinery is intended to maximize the value of Alberta's energy resources by processing low value bitumen feedstock, the team will persevere until this milestone is reached.

Part of Alberta's Refining Future

Refining is part of Alberta's history, though the landscape of energy production is shifting. The environment, economy, and pipeline constraints are seeing a heightened focus. The Sturgeon Refinery fits well within this focus – an innovative business model that provides a value-added solution for bitumen while managing the environmental footprint of fuel products. The project is not without challenges and setbacks, all of which have been and will be overcome by a skilled and committed team.

Fortunately, the future outlook for processing bitumen to diesel remains positive. Pipeline constraints for exporting bitumen combined with sustained demand for refined product in Western Canada support additional refining capacity in the province. The Sturgeon Refinery was built to enhance the future of Alberta's refining landscape, and continues to press forward to achieve this goal.



Sections of pipe are removed as repairs are underway to fix the stress cracks. (Photo credit: Sterling Crane)