

# CLEAN RESOURCES

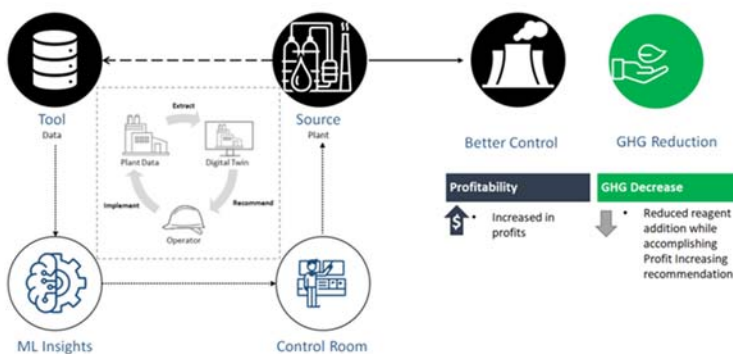
## ADVANCED HYDROCARBONS

### CLEANER HYDROCARBON PRODUCTION- DIGITAL OILFIELD

## FUNDING DETAILS

## Artificial Intelligence Assisted Computer Vision Application in Oil & Gas Mining Industry

Visual inspection plays an important role in the processing of oil sands. An oil sands control room typically has several video feeds being continuously monitored by control room operators. The ore quality at the ore preparation plant is monitored to determine optimal ore blending and water addition, and the liquid/froth interface level is monitored at the ore processing stage to maintain optimal extraction efficiency. There are several challenges with this approach. First, since the visual inspection is qualitative in nature, operators are not consistent in how they interpret and respond to camera feeds. Second, the need for near continuous monitoring burdens control room operators. NTWIST proposes to use computer vision, a subset of artificial intelligence which enables the quantification of visual information, to address these challenges. This solution is positioned to provide significant environmental and economic benefits to customers and strengthen Alberta’s position as a leader in applied artificial intelligence.



**RECIPIENT:**  
NTWIST Inc



**PARTNERS:**  
Suncor Energy



**TOTAL BUDGET:**  
\$536,120



**AI FUNDING:**  
\$375,284



**PROJECT DATES:**  
FEB 2021 –  
SEP 2022



**PROJECT TRL:**  
Start: 5  
End: 8

## APPLICATION

NTWIST will use the cameras already installed on site in combination with computer vision algorithms to automate tasks currently being carried out through remote visual inspection by control room operators at oil sand operations. NTWIST will operationalize these computer vision algorithms using its existing software platform which communicates with the mine's existing equipment and control room software.

# ALBERTA INNOVATES CLEAN RESOURCES

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## PROJECT GOALS

The key goals of the project are:

- Standardize the interpretation of remote visual video feeds to the control room to reduce variability in processing conditions
- Reduce the burden on operators by providing them with alarms and recommendations when needed to help better inform their decisions
- Allow for tighter control of key operating parameters

## BENEFITS TO ALBERTA

The successful implementation of this NTWIST technology or use of the knowledge generated could result in:

- Improved bitumen extraction efficiency through optimized process control
- Reduced GHG emissions and water consumption as a direct result from optimized process inputs (water, temperature, residency time)
- Reduced operational costs resulting from optimized energy usage in processing streams



2 Publications



3 Project Jobs



11 Future Jobs



1 New  
Product/Service



\*Enables Emissions  
Reductions

## CURRENT STATUS

### MAY 2022

NTWIST has completed the identification and compilation of primary and secondary data sources, set up the initial models for machine learning and currently working with geologists on interpretive models. These data models, that are used in their computer vision algorithms, and currently being validated to assess model performance and image generation. The validation process cycles will incorporate bug fixes and any issue identification to be used for mini-release updates.