



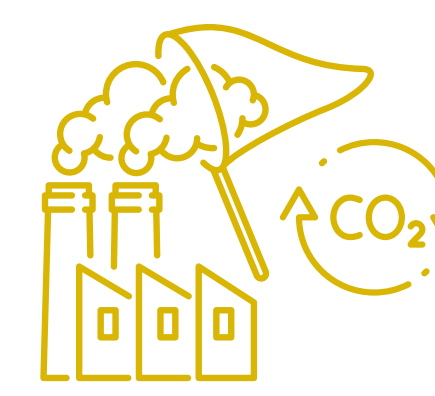
Carbon Capture & Storage from Point-Source Emitters

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Acknowledgments: Group P10 would like to express our gratitude to all of our professors and advisors: Dr. Kevin Smith, Mr. Sergio Beretta, Dr. Jonathan Verrett, Dr. Alireza Bagherzadeh, Dr. Pranav Chintalapati, Dr. Chester Upham and Dr. Alan Gu. With special thanks to Dr. Kevin Smith for his invaluable support and advice throughout this project, and to Dr. Alan Gu from Mitico for sponsoring this project and guiding us.



Design Basis



Design a CO₂ capture system using Pressure Swing Adsorption (PSA) to capture CO₂ emissions from pulp mills.

Input: 70,000 tonnes/yr flue gas with 15 wt% CO₂

Output: 8662 tonnes/yr of 95wt% Pure CO₂

Societal Needs

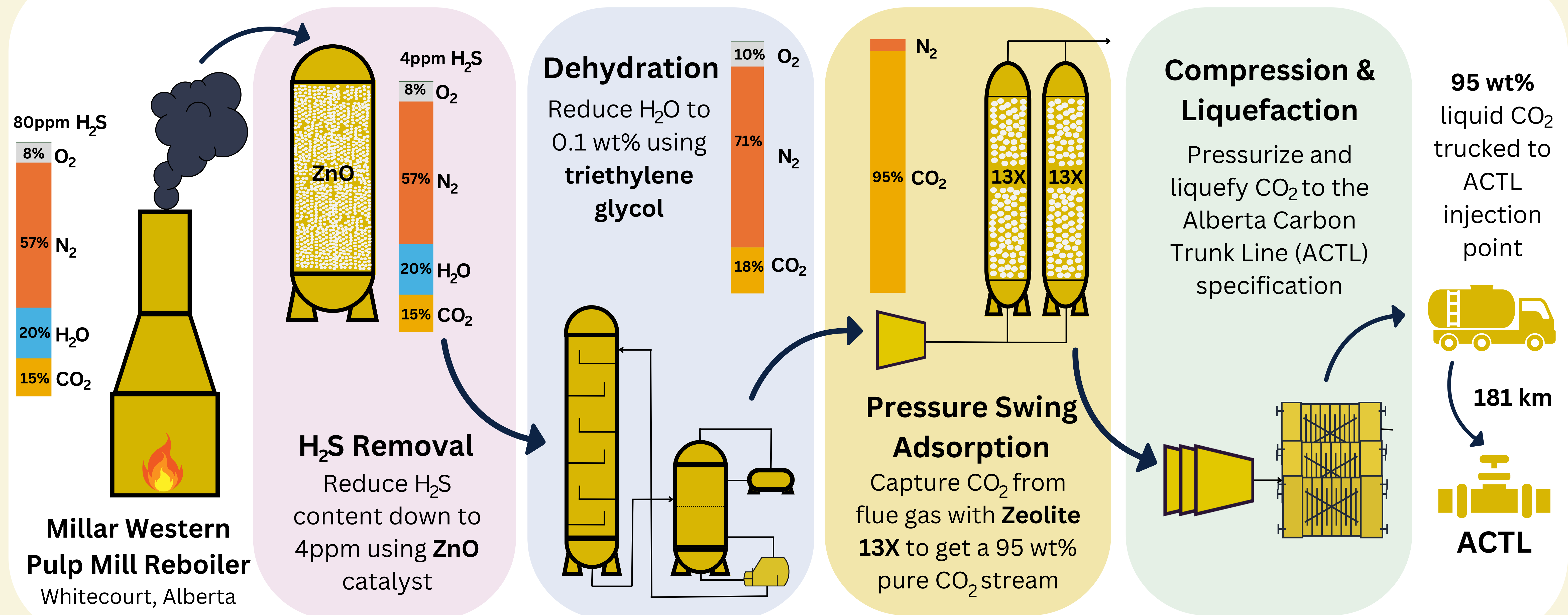
The pulp & paper industry is a high CO₂ emitter:

10% of heavy industry emissions (7.7 Mt CO₂ eq) in Canada (as of 2019)

2% of global CO₂ emissions (as of 2022)

Utilize proximity to ACTL for CO₂ reduction

Process Description



Environmental Analysis

Gaseous Emissions

Within Federal & Provincial Limits



H₂S & CO₂

Solid Disposal

Regenerated every 6 months



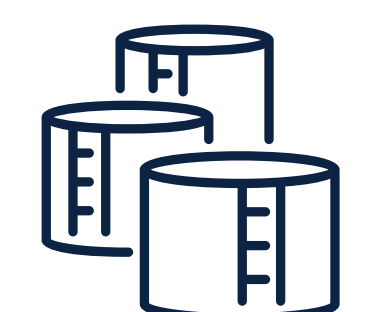
ZnO

Liquid Emissions



Cooling water effluent sent to treatment in Whitecourt

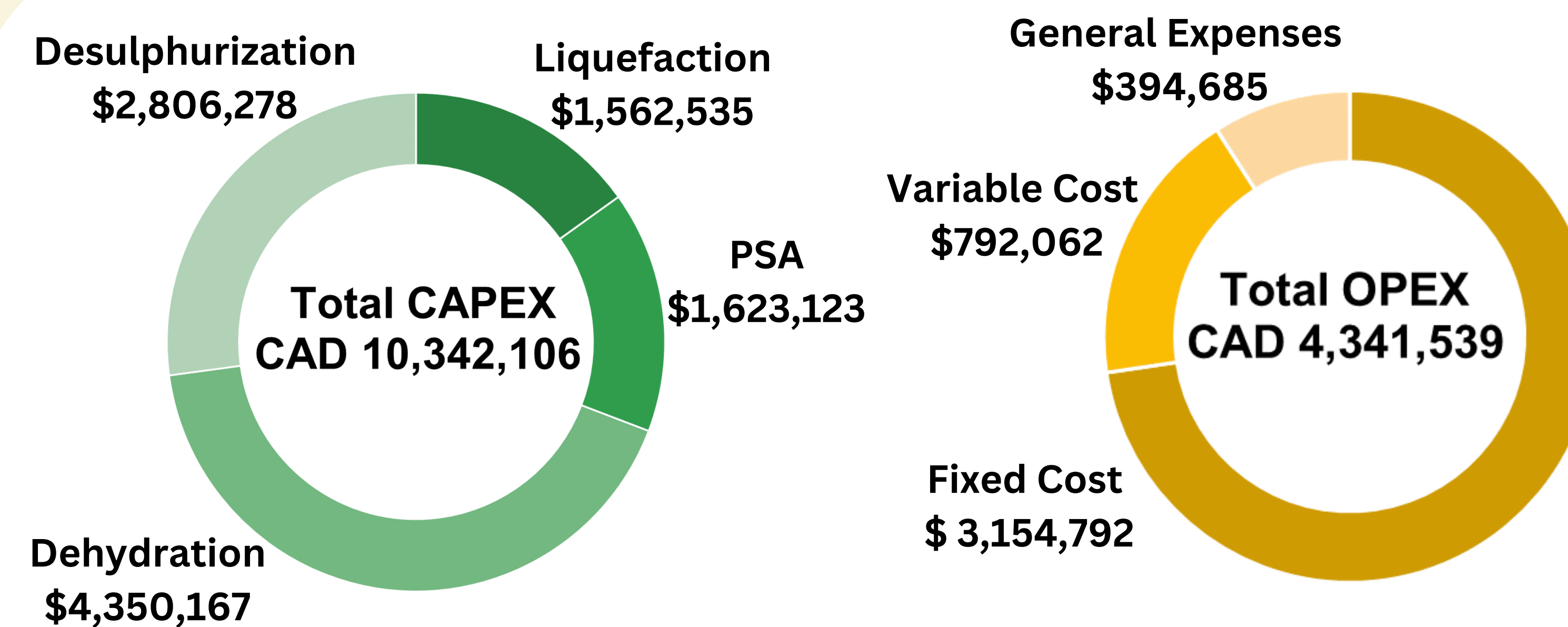
Wastewater



Triethylene glycol for dehydration treated every 6 months

Glycol

Economic Analysis



Full Process: 561 \$/tonne of CO₂ Captured

Client Interest: (PSA & Liquefaction) 165 \$/tonne of CO₂ Captured

Plant Layout

