

# DESIGN OF A SMALL-SCALE LNG PLANT FOR REMOTE APPLICATIONS

THE UNIVERSITY OF BRITISH COLUMBIA

## AN ALTERNATIVE TO DIESEL FUEL



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### Objectives

- 1 Design a small-scale natural gas liquefaction unit for implementation at a remote mining site in Northeastern BC
- 2 Determine the economic feasibility of replacing diesel fuel with LNG to fuel mine-haul trucks
- 3 Meet environmental emission limits

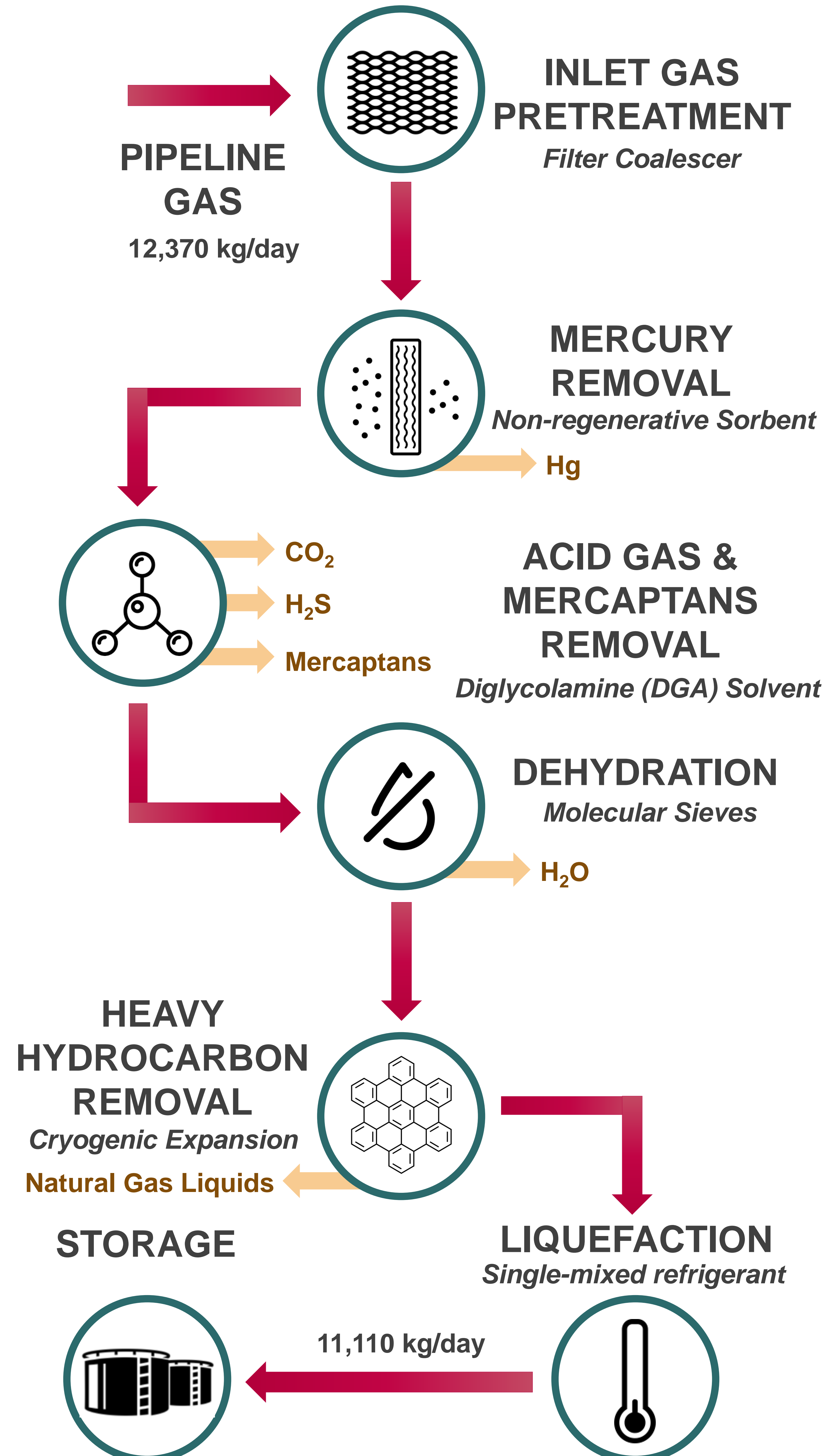
### Novelty

- Monetization of small/remote gas reserves Combined contaminant removal
- Easy to scale skid-mounted design Replaces diesel in hybrid fuel mine-haul trucks
- Minimal land impact Produce LNG in proximity of end-user

### Emissions

- SO<sub>2</sub>**  
45% Lower than emissions limit
- CO<sub>2</sub>**  
61% Lower than emissions limit
- NO<sub>2</sub>**  
10% Lower than emissions limit

### Process Flow



### Sustainable Features

- Compact 2.47 acre facility
- Recovered natural gas liquids sold for use in other applications
- Reduced water consumption through use of air coolers

### Economics

- \$38.20 M CAD** Total Capital Investment
- \$2.87 M CAD/year** Manufacturing Cost
- \$4.04 M CAD/year** Annual Cost Savings
- 8.6%** Incremental Rate of Return
- 9.4 years** Payback Period