

# Heavy Crude Oil Transportation using Electromagnetic Heaters

Ricardo Dunia

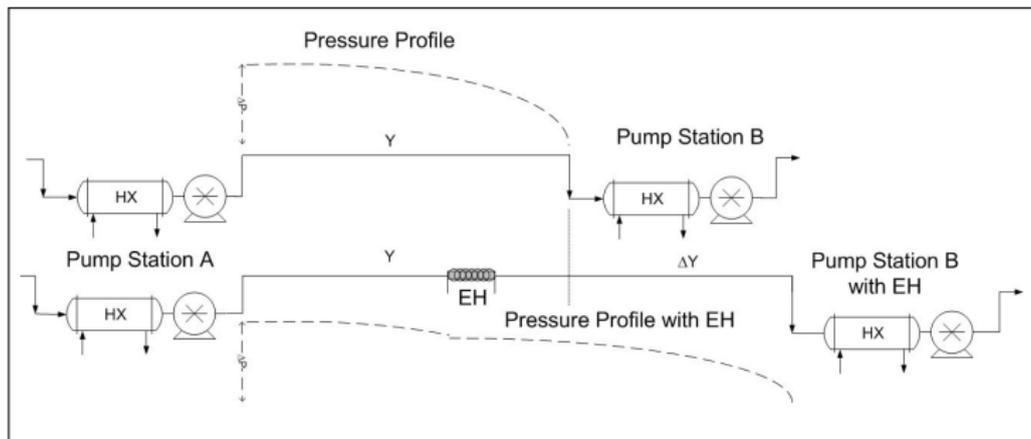
University of Texas at Austin  
Chemical Engineering Department

July 9, 2012



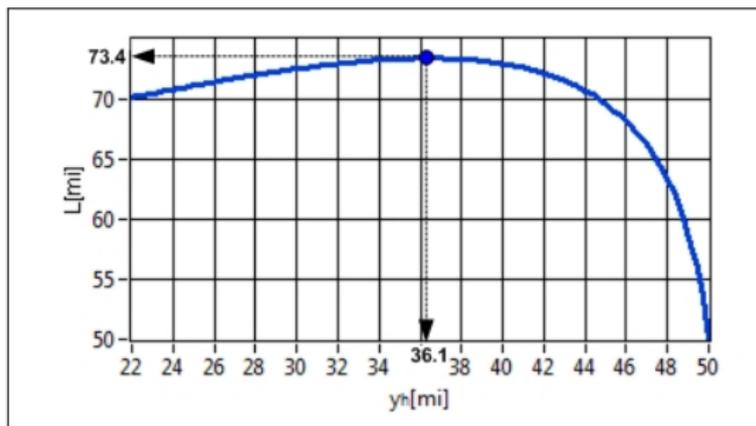
# Economics

- ▶ Sequential heating of heavy oil is needed because of heat losses with the environment.
- ▶ Electromagnetic heaters (EH) can be installed along a significant pipeline stretch to increase the distance between pump stations.



## Example

- ▶ Effect of the EH location  $y_h$  on the total length of the pipeline,  $L$ .
- ▶ The optimum location is  $y_h = 36.1$  mi, which allows  $L = 73.4$  mi between pump stations.



## Results

- ▶ Figure shows temperature, viscosity and pressure drop profiles for the optimum EH location.
- ▶ The distance between pump stations is increased in 30% for each EH installed.
- ▶ Further analysis based on operational costs is required to determine the feasibility of this technology.

