

Mines Production Laboratory Proposal Downhole and Midstream Equipment Operation Lab Units

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Currently the Department of Petroleum Engineering at Mines does not have a production laboratory to allow students to develop a practical knowledge regarding downhole and surface production equipment. The construction of several compact lab units is proposed in order to provide a practical experience to students. This will help students to have a better understanding of the operation and application of different downhole and surface equipment, learn to recognize and troubleshoot typical operational problems and propose possible solutions.

Proposed Lab Units

- Horizontal well simulator
- Horizontal separator and metering
- Vertical separator and metering
- Two-phase flow pattern demonstration
- Gas lift well
- Plunger lift well
- Sucker rod pump well
- Electrical submersible pump well
- Downhole gas-liquid separators
- Liquid-liquid and liquid-solid separation (Hydrocyclones)

Funding & Project Goals

- 10 lab units
- ~\$30,000 USD/unit
- Small donations from companies and individuals
- Build one lab unit at the time as donations are collected

Donors will be recognized when a lab unit is opened to use by the students.

Skills and Topics Students Would Learn

- The practical side to artificial lift, liquid loading, slugging, two-phase flow, liquid-liquid and liquid-gas separation, flow control and metering.
- How to troubleshoot typical operational problems and propose possible solutions to solve these operational problems.

Benefits to the Industry

- More qualified young labor force
- Reduce required on-job training time
- Local/regional high technology training resource for non-petroleum engineers