

Pressure Drop Laboratory
FABE 325 – Dr. Gönül Kaletunç
TA – Alex King, Eun Kyong Kim
Winter 2005

Objectives:

1. To study the effect of pipe diameter, pipe length, fittings, and elevation change on pressure drop in piping systems.
2. To determine the power requirements of a pump.

Procedure:

- Set the pump speed
- After steady flow is achieved, measure pressure differential and pressure at various points in the pipe.
- Read frequency value using oscilloscope
- Repeat this procedure for three different pump speed settings.
- Determine the density of the CMC solution

Calculations:

- 1) Prepare a diagram of the set-up by clearly marking all of the elements in the set up.
- 2) Use the calibration data given below to calculate the flow rate through the system
- 3) Calculate and compare the pressure drop in 1 and 1.5 inch diameter pipes.
- 4) Calculate the pressure drop due to elbows in the set up.
- 5) Calculate the power of the pump.

Flow rate calibration data

Frequency (Hz)	Flowrate (kg/s)
9.62	0.1125
15.73	0.1753
19.62	0.2151
23.75	0.2702
28.2	0.3238

Pressure differential calibration data:

Current (mA)	Pressure differential(psia)
4.60	0.00
9.97	1.25
13.11	2.00
15.62	2.59
18.53	3.30
19.35	3.50

Viscosity of 0.8% CMC solution: 0.0502 Pa s

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Session 1 8:30 – 10:30 am	Group 1	BENTLEY ANORA ELIZABETH FREW BETHANY ANN GOOD CHRISTOPHER SEAN HENRY JANELL CHRISTINE
	Group 2	HORKANS CRYSTAL MARIE KENNEDY KATHERINE GAIL RETHMEL BENJAMIN ROBERT RICE REID ROLLAND
Session 2 9:30 – 10:30 am	Group 3	THEJOISWORO SAVITRI W VENNEKOTTER KYLE MATTHEW ZELIN MATTHEW RYAN KALLIO SARA E
	Group 4	BAYES MATT WILLIAM KALLIO REBECCA MOSELEY MARK WILLIAM VAN BREUKELEN CELINE M
Session 3 2:30 – 3:30 pm	Group 5	PATZ DAVID CHARLES SCHIELEIT ERIC WILLIAM CONKLIN JAMES O EICHEL CATHY V
	Group 6	MOON JARED JAMES SCHNEIDER ETHAN DANIEL STANCHFIELD LAUREN MARIE ANDRE MARK WESLEY
Session 4 3:30 – 4:30 pm	Group 7	BRADEMEYER CHRISTOPHER CLAWSON KENNETH CHARLES CURRIE ANDREW JAMES JENSEN AMANDA MICHELLE
	Group 8	KANAKARAJAN PRADEEP KAPAROS ANDREW SCOTT KAUFMAN ADAM JOHN KIEL LISA MARIE
	Group 9	MEYER LILY NOEL CUTCHER JOSEPH JON KETZER DANIEL THOMAS