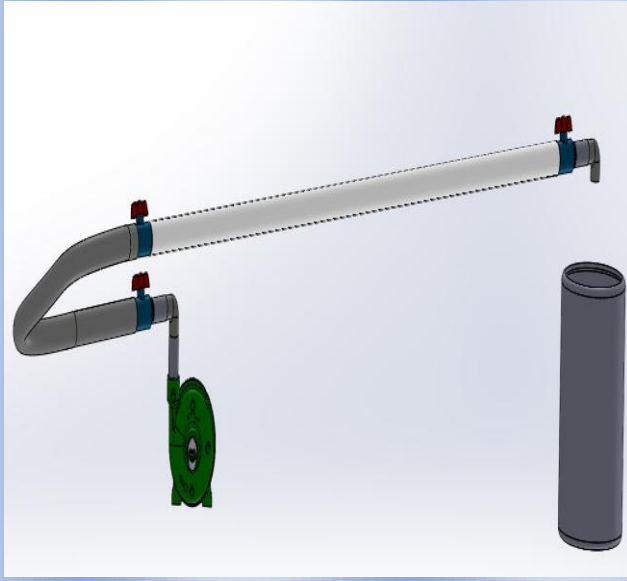


DESIGN AND SOLIDWORKS

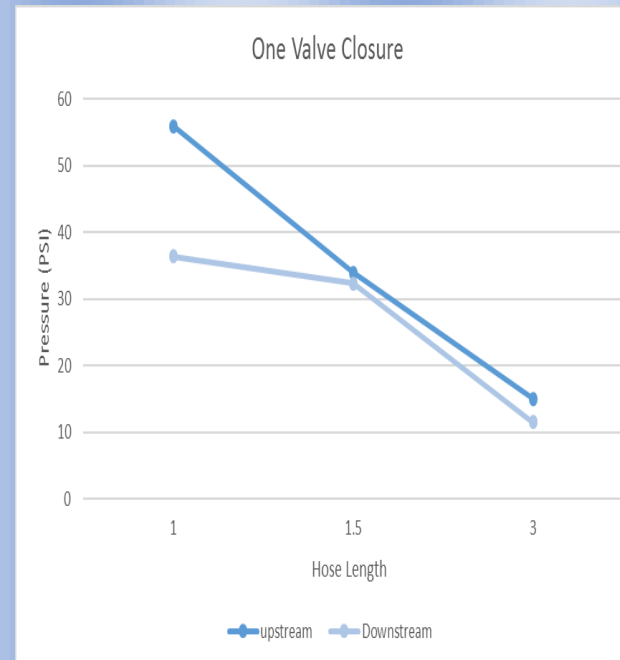


RESULTS AND TESTING

After many testing and trying different cases on the system we found the following:

1. Having more length so the system we result in lower water hammer.
2. Making loops on the hoses will result in lower water hammer.
3. Sudden valves closure will result in higher pressure which is higher water hammer

Graph below shows the pressure VS. the hose length and how it is decreased:



جامعة الأمير محمد بن فهد
PRINCE MOHAMMAD BIN FAHD UNIVERSITY

Collage of Engineering

**Department of Mechanical
Engineering**

*Design of Pilot Scale Water
Hammer*

Team 1

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ABSTRACT:

Pressure waves and their velocities, generated by rapid changes in the flow conditions at the closure of a valve, are well understood, and the theory to predict them is well developed. Such hydraulic transients are commonly referred to as water hammer, since water is the fluid involved. Most of the earlier tests of water hammer pressures and velocity have been conducted in pipes constructed more metal or concrete, when are the common materials used for pipes. However, as the morphology of new era of material industry is getting largely developed, water hammer phenomena need to be addressed. The main aim of the project is to develop a test stand to study physics phenomena of the water hammer.

OBJECTIVES:

1. To design a test stand for water hammer system
2. To design and select the required pipes and pump
3. To select the flow type required valve.
4. To measure the increases in pressure in the pipes due to the pressure wave.
5. To investigate the effect of piping length and design.
6. To investigate the effect of the shutting off time of the flow.

FUTURE WORK & RECOMMENDATIONS:

1. More testing points
2. More loops
3. Different hose diameter
4. Rigid system with fixed pipes
5. Adding water tower
6. Using different types of valves