**Outcome:** Students will be able to identify, explain their function/use and proper operation of distinct types of process valves and their typical accessories used in industrial processes including; Safety relief valves, manual and automated isolation valves, control valves.

**Lecture:** Lecture to review:

1. General valve discussion.
2. Process valve hierarchy.
3. Safety valve purpose, function and operational requirements.
   1. Maintenance
   2. Codes and Standards
4. Isolation Valves
   1. Purpose of isolation valves
   2. Manual vs. automated
   3. Primary Function
   4. Typical types
      1. Globe
      2. Ball
      3. BFV
      4. Gate
      5. Pinch
   5. Operation and position indication
   6. Operational issues & maintenance
5. Control Valves
   1. Purpose of control valves
   2. Automation options
   3. Positioners
   4. Standard types
      1. Globe
      2. Ball
      3. BFV
   5. Operation and position indication
6. Other Valve Types
   1. Check
   2. Stop Check
   3. Blowdown
   4. Etc.
7. ISA Symbology

**Demo(s) Utilized:**

1. Location: Small equipment lab
   1. Safety relief valve cutaway
   2. Manual valve demos
   3. Automated valve demos
   4. Control valve demos

**Lab:**

Location: Small equipment lab

1. Disassembly and reassembly of several valves
2. Operational demo of automated valves

Location: Hot unit (GRHS)

1. Valve identification
2. Valve position exercise
3. Manual globe valve throttling exercise

**Homework:**

Valve comparison presentation

**Documentation:**

1. Tech I Valves .ppt

**Assessment:**

1. Homework
2. Lab Work
3. Lab Safety
4. Valve hands-on
5. Quiz(s) & Final Exam

**Valve PowerPoint Homework**

After researching, a great way to know if you understand the material is by teaching someone else. You and a partner will be picking **TWO** valves discussed in class and will present your findings to the entire class.

Presentations will take place on \_\_\_\_\_\_\_.

Get approval for the valves so I can monitor that multiple groups are not doing the same ones.

Presentations should take approximately 10 minutes. Please include the following items in your presentation:

**Presentation Requirements:**

* Presentation needs to have a picture with a breakdown of the valve components and their function for your valves.
  + Description of what each component does.
* Description of how your valves work:
  + Easy to understand/describe the difference if they can be manual vs. pneumatic (automatic).
  + Is it used to stop the flow? Is it used to control flow?
  + Can you compare it to something that will help people remember it? (e.g., a knife gate valve is like a guillotine)
* Examples of where it is used in industry/what type of material is it primarily used for?
* Advantages
* Disadvantages
* What are the common problems that occur with this valve?
* Video from YouTube so we can see the valve in motion
* Presentation slides must be neat and well organized:
  + Easy to read
  + Easy to follow
  + Pictures and visuals where necessary
* The presentation must be informative and interesting:
  + Presenters should not read from the slides, make good eye contact with listeners
  + Presenters should be enthusiastic and do not speak in a monotone voice
* Your class peers and I will evaluate the presentation based on the criteria indicated on the attached form.
* The presentations and the peer evaluations will be turned in.
* I will be grading both the presentation for technical content, clarity and presenter deportment and the evaluation form for objectively.

This presentation will go towards your Lab grade and is worth 30 points

**Grade Breakdown**

* **\_\_\_/5 points:** Presentation needs to have a picture with a breakdown of the parts and their function for each of the valves
  + Description of what each component does
* **\_\_\_/5 points:** Description of how your valves operate:
  + Easy to understand/describe the difference if they can be manual vs. pneumatic(automatic)
  + Is it used to stop the flow? Is it used to control flow?
  + Can you compare it to something that will help people remember it? (for example; a knife gate valve is like a guillotine)
* **\_\_\_/5 points:** Application of where it is used in industry/what type of material is it primarily used for?
* **\_\_\_/2 points:** Advantages: Why would you choose this valve?
* **\_\_\_/2 points:** Disadvantages: Why wouldn’t you choose this valve?
* **\_\_\_/2 points:** Video from YouTube so we can see the valves in motion
* **\_\_\_/2 points:** What are the common problems that occur with this valve?
* **\_\_\_/2 points:** Presentation slides must be neat and well organized:
  + Easy to read & follow
  + Pictures and visuals where necessary
* **\_\_\_/5 points:** Presentation must be informative and interesting:
  + Presenters didn’t read off the slides, made good eye contact with listeners
  + Presenters were enthusiastic and did not speak in a monotone voice
    - Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score: \_\_\_\_\_\_\_\_
    - Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Score: \_\_\_\_\_\_\_\_

***Evaluation Criteria:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **5 = Exceeds** | **4 = Meets** | **3 = Mostly Meets** | **2 = Somewhat/Partially Meets** | **1 = Doesn't Meet** |
| Proficiently explains and engages peers actively in discussion of technical concepts in context; inspires, deepens rich technical understanding of others | Clearly and competently discusses technical concepts (technology, applications) with peers; enhances technical knowledge of others | Understandably explains technical concepts (technology, applications) with peers; reinforces technical expertise of others | Unclearly discusses technical concepts (technology, applications) with peers; does not aid but may confuse understanding of others | Incompetently presents technical concepts (technology, applications) to peers; leaves others confused, doubting the correctness of the information |

**Peer Evaluation Form**

Peer evaluation completion and turned in up to 10 Points

Presenter: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evaluator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evaluation components:

Content: Did the content of the presentation meet the required project expectations?

1 2 3 4 5

Was the technical information communicated effectively? (Did you understand it?)

1 2 3 4 5

Deportment/Presentation Skills. (e.g., eye contact, not reading the slide, speaking quality, confidence)

1 2 3 4 5

Overall score: \_\_\_\_\_\_\_\_\_

Write three compliments on how the presenter was effective:

1.

2.

3.

Make two suggestions for how the presenter can improve in the future:

1.

2.