

GOOD REGULATION  
IS NOT JUST  
ABOUT THE REGULATOR

# Station Types

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- Point of Delivery (POD)
- Point of Receipt (POR)
- Industrial
- Commercial
- Residential

# Station – Design Information

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- Upstream pipeline MAOP
- Inlet pressure
  - ❖ Maximum
  - ❖ Average
  - ❖ Minimum
- Downstream customer
  - ❖ MAOP
  - ❖ Test pressure or lowest pressure component

# Station – Design Information

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- Outlet pressure
  - ❖ Maximum
  - ❖ Minimum
- Flow rate
  - ❖ Maximum
  - ❖ Average
  - ❖ Minimum
  - ❖ Future
- Temperature

- Regulator selection
  - ❖ Accuracy required
  - ❖ Type
    - Self vs Pilot
  - ❖ Capacity calculation
  - ❖ Capacity tables
  - ❖ Single vs. multiple regulator runs
  - ❖ Regulator pressure rating

# Regulator Station Design

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- Regulator design pressure rating
  - ❖ Upstream
  - ❖ Downstream

## ➤ Government Regulations

- ❖ Code of Federal Regulations title CFR Part 192  
Natural Gas

- ❖ American National Standards Institute ASME /  
ANSI B-31.8 “Gas Transmission and Distribution  
Piping Systems”

## ➤ Industry Information

- ❖ Regulator manufacturers often place useful design  
information in their bulletins and data sheets

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# CRITICAL COMPONENTS FOR PRESSURE REGULATION DESIGN



# Flange Pressure Classes

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- ANSI Iron Class (ASTM 126)

- Class Pressure

- ❖ 25 45 Psig Class A
- ❖ 125 175 Psig Class A & 200 Psig Class B
- ❖ 250 400 Psig Class A & 500 Psig Class B
- ❖ 800 800 Psig Class B

# Flange Pressure Classes

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## ➤ ANSI Steel Class

➤	<u>Class</u>	<u>Pressure</u>
❖	150	285 Psig
❖	300	740 Psig
❖	400	990 Psig
❖	600	1480 Psig
❖	900	2220 Psig
❖	1500	3705 Psig
❖	2500	6170 Psig

## Other Fittings and Equipment

- Valves
  - ❖ Typically have ANSI rating for flanged valves or MAWP pressure rating (1000#, 2000#, 3000#, etc.) for threaded valves
- Threaded Fittings
  - ❖ Typically have MAWP pressure rating (1000#, 2000#, 3000#, etc.)
- Filter/Separators and Heaters
  - ❖ Stamped with maximum design pressure
- Electronics
  - ❖ May have threaded connections for measuring properties of gas, will be rated for a maximum allowable pressure

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# DESIGN

## ➤ Additional Considerations

- ❖ Single run versus dual run settings
- ❖ Regulator run staging (i.e. multiple cuts)
- ❖ Freezing issues from large cuts or large volumes
- ❖ Chattering from utilizing multiple cuts
- ❖ Relief valve sizing
- ❖ Blowoff sizing

# Station Piping

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- Sizing
  - ❖ Pressure drop or line loss
  - ❖ Meets design pressure (when considering design factors)
- Configuration
  - ❖ Flow path
  - ❖ Constructability
  - ❖ Ease of access and maintenance
- Gas velocity
  - ❖ Equations
  - ❖ Noise
  - ❖ Erosion

- Doors
- Height
- Space between settings and walls
- Valve hand wheels
- Foundations
- **Electrical classification for gas facilities**  
(AGA XF0277 Classification of Gas Utility Areas for Electrical Installation)
  - ❖ Class I, Division 1, Group D
  - ❖ Class I, Division 2, Group D

# Station Layout

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- Filters
- Heaters
- Regulation
- Meters
- EGM Buildings
- Auxiliary equipment
- Gates
  - ❖ Man
  - ❖ Vehicular
- Vehicular barriers



# Station Location

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QUESTIONS ?