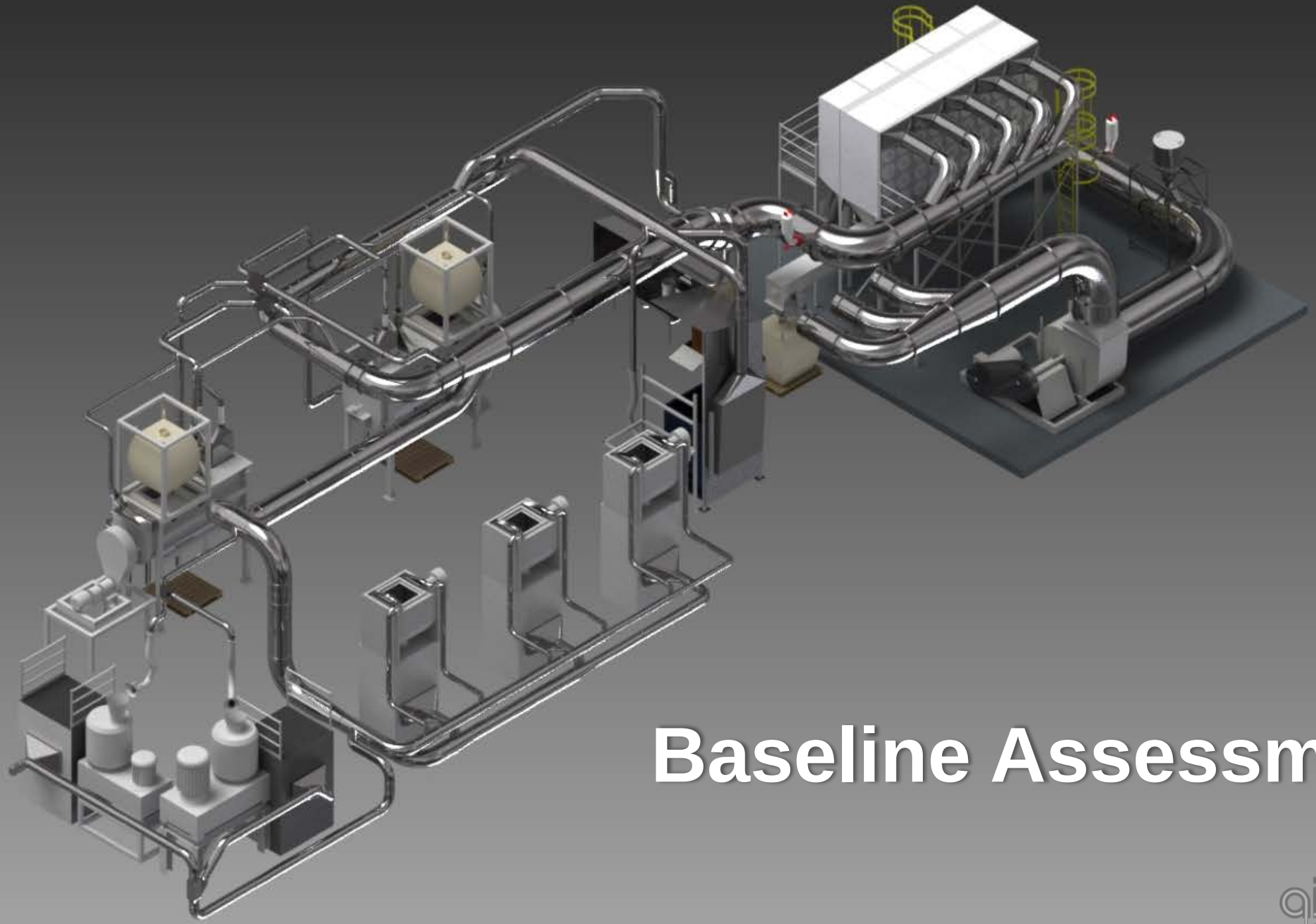
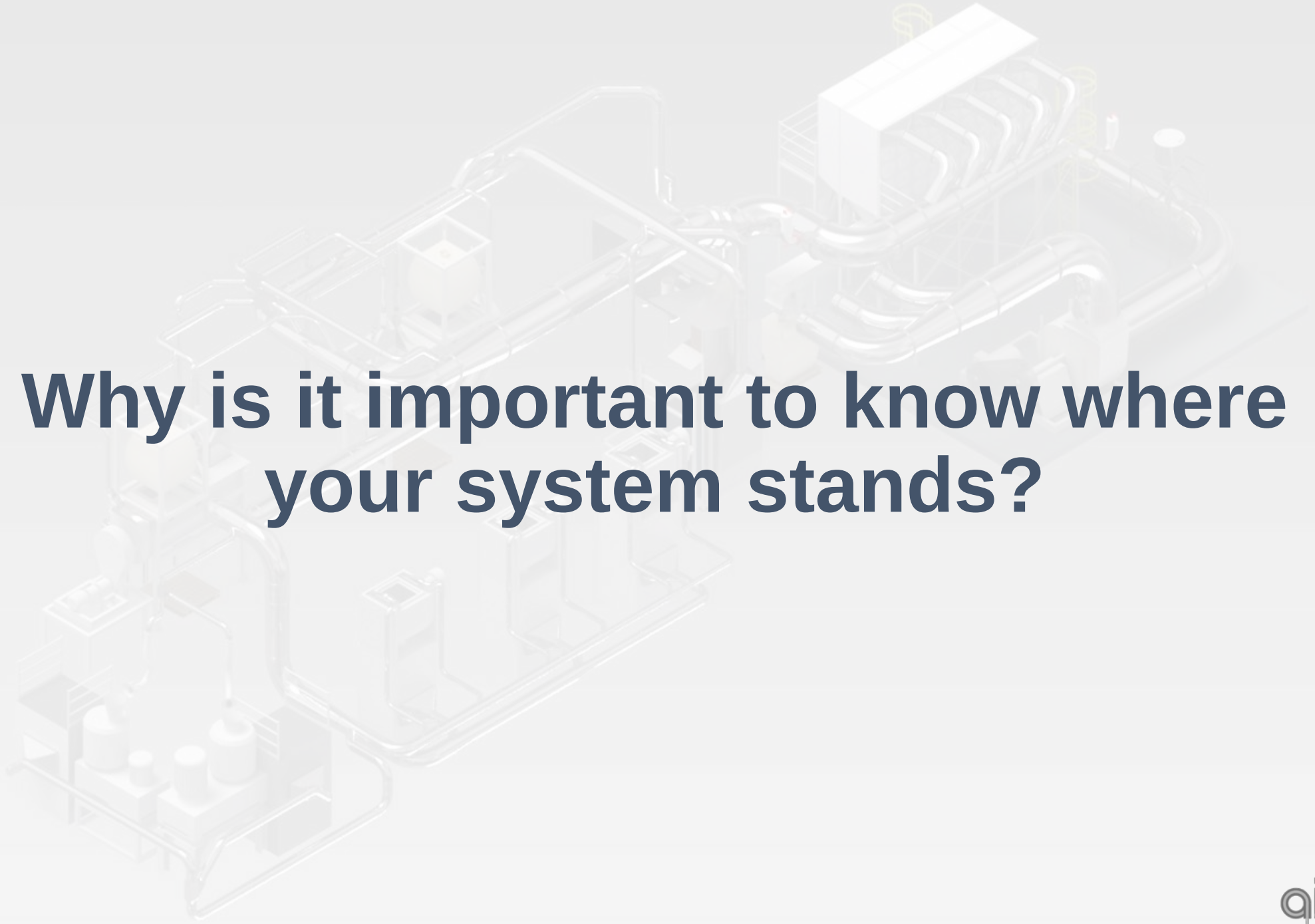


Baseline Assessments

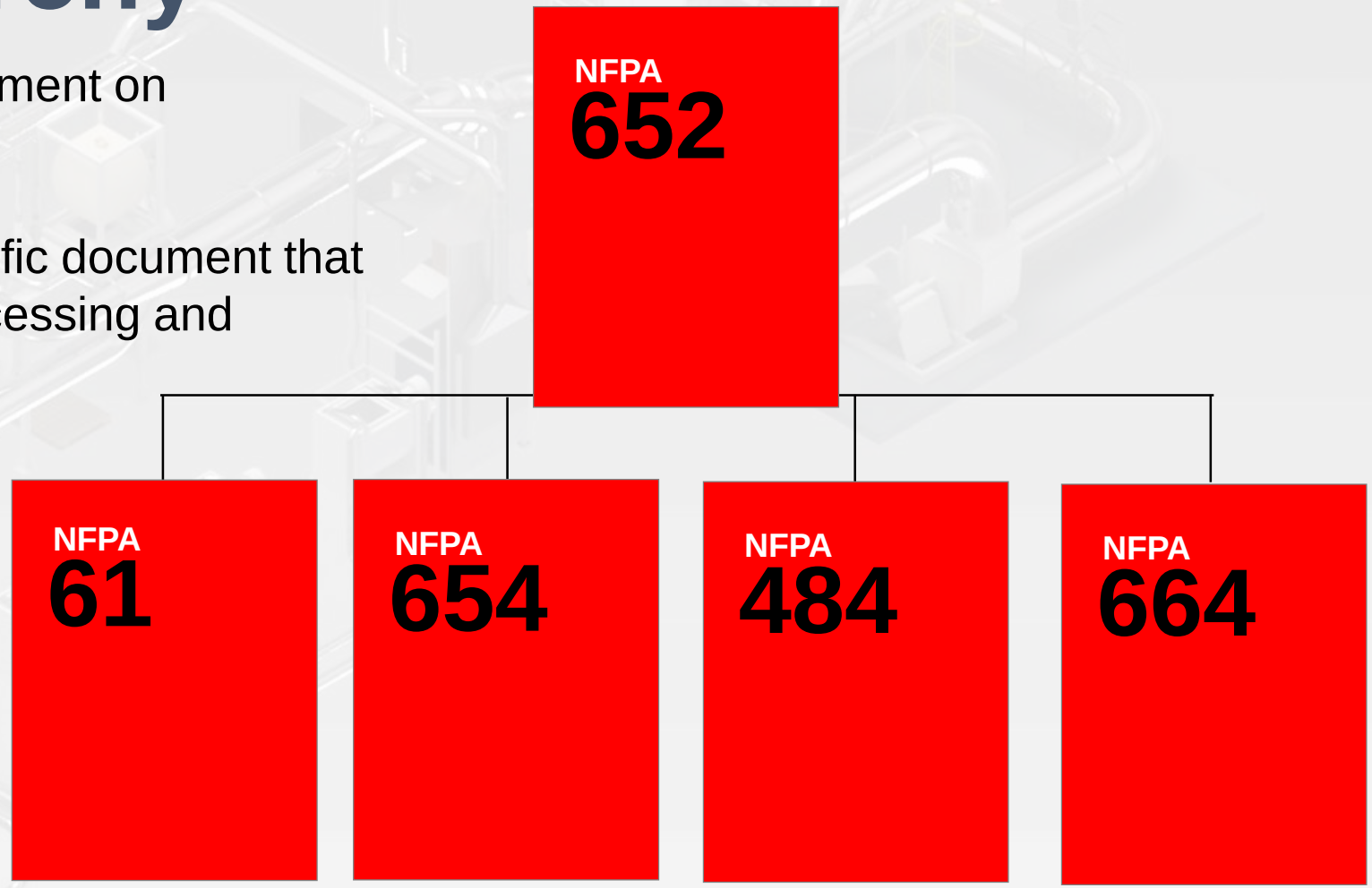


Why is it important to know where your system stands?

NFPA Hierarchy

NFPA 652: Governing document on combustible dust.

NFPA 61: Commodity-specific document that is pertinent to the grain processing and poultry industry.



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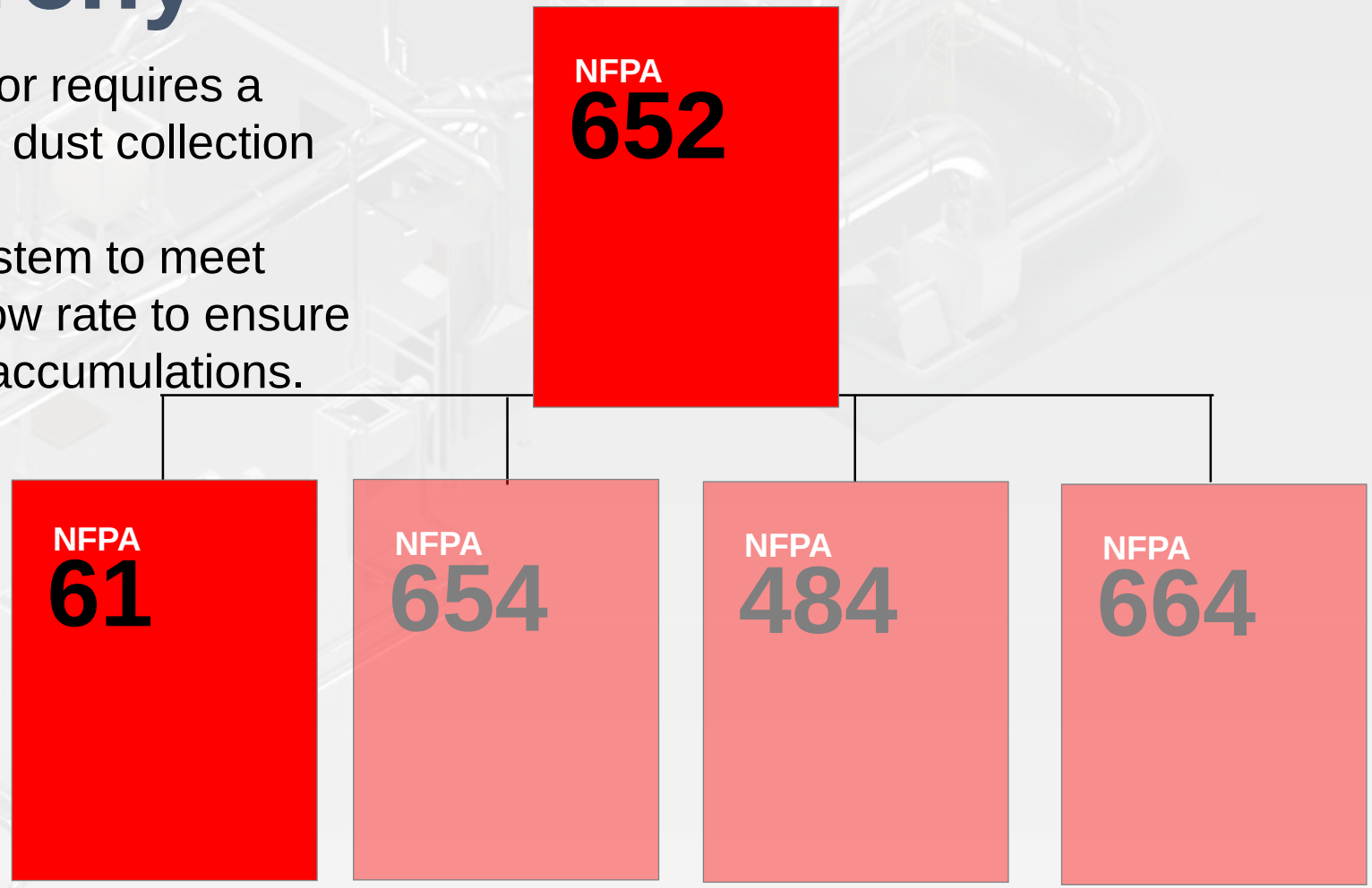
NFPA Hierarchy

NFPA 61 neither prohibits nor requires a specific performance from a dust collection system.

NFPA 652: Requires the system to meet minimum velocity/volume flow rate to ensure the system remains free of accumulations.



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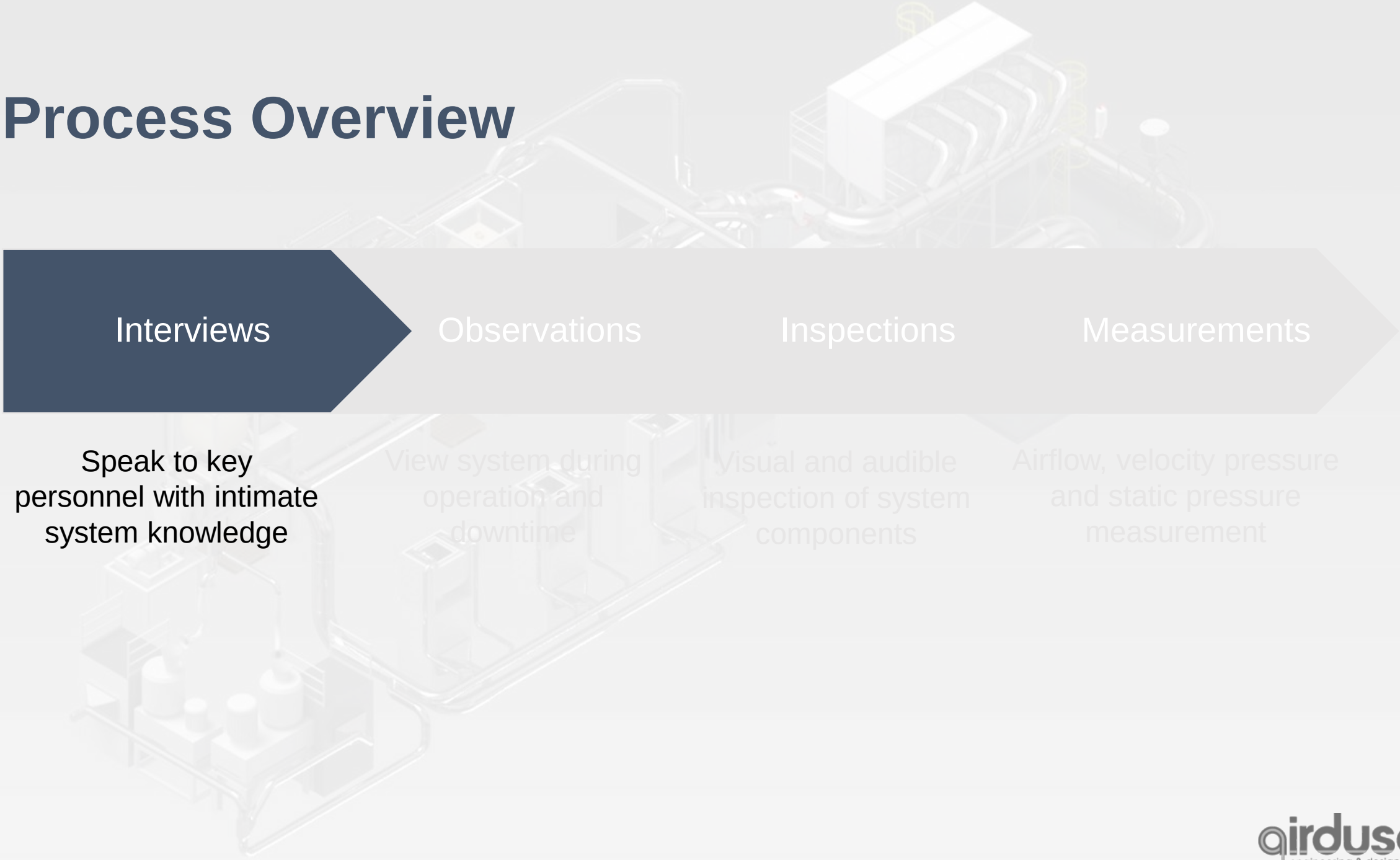
Baseline assessments establish a metric for long-term tracking and monitoring.

Baseline assessments determine proficiencies and deficiencies against an acceptable standard and helps determine a system's risk level.

- Our standard is a combination of ACGIH requirements, NFPA requirements, and experience.
- Baseline is defined as a datum by which performance can be measured
- Datum can be established for an existing system, compliance requirement, and desired performance requirement.
- OSHA expects to see system performance and maintenance documentation upon request.

Process Overview

Process Overview



Interviews

Speak to key personnel with intimate system knowledge

Observations

View system during operation and downtime

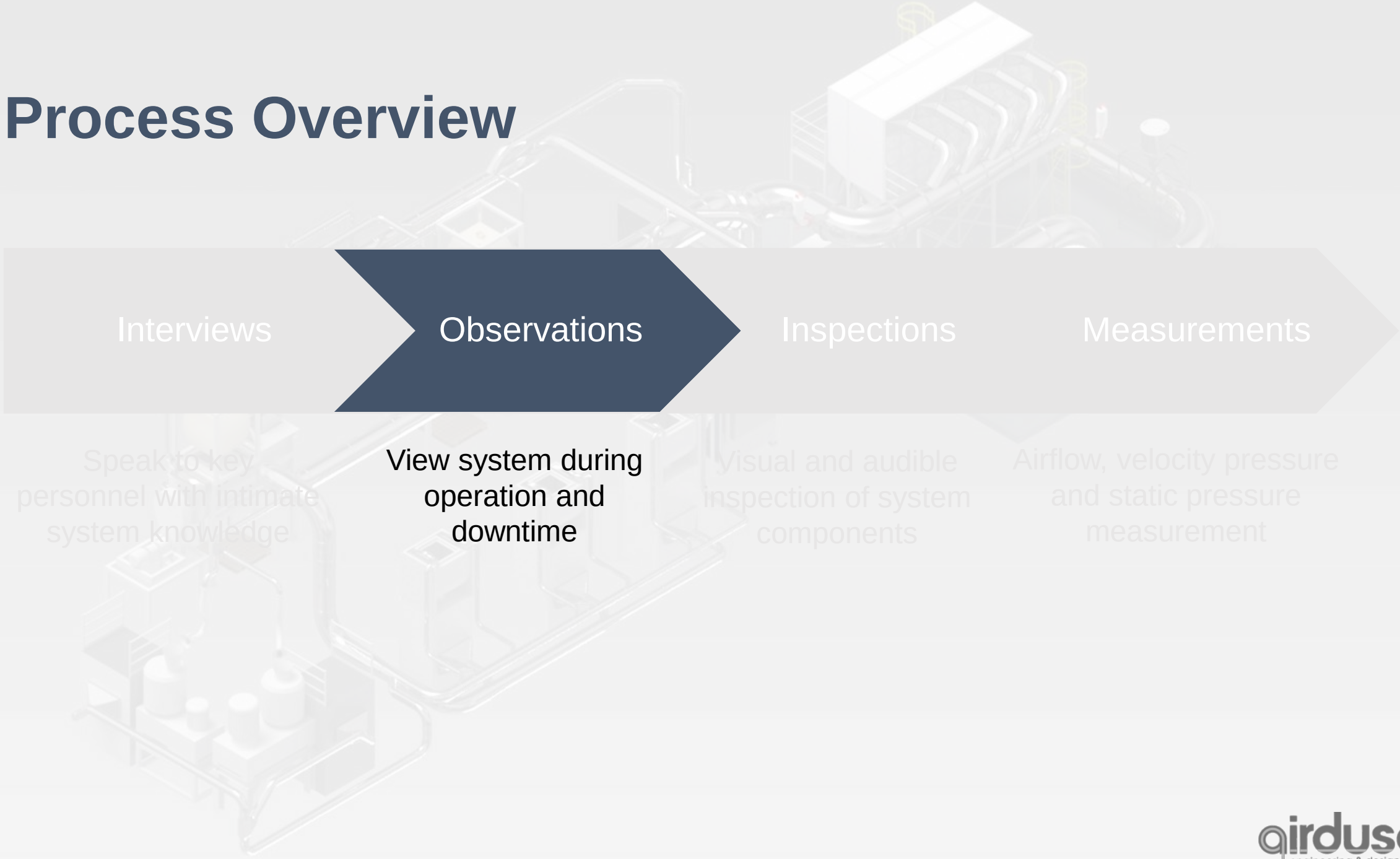
Inspections

Visual and audible inspection of system components

Measurements

Airflow, velocity pressure and static pressure measurement

Process Overview



Process Overview

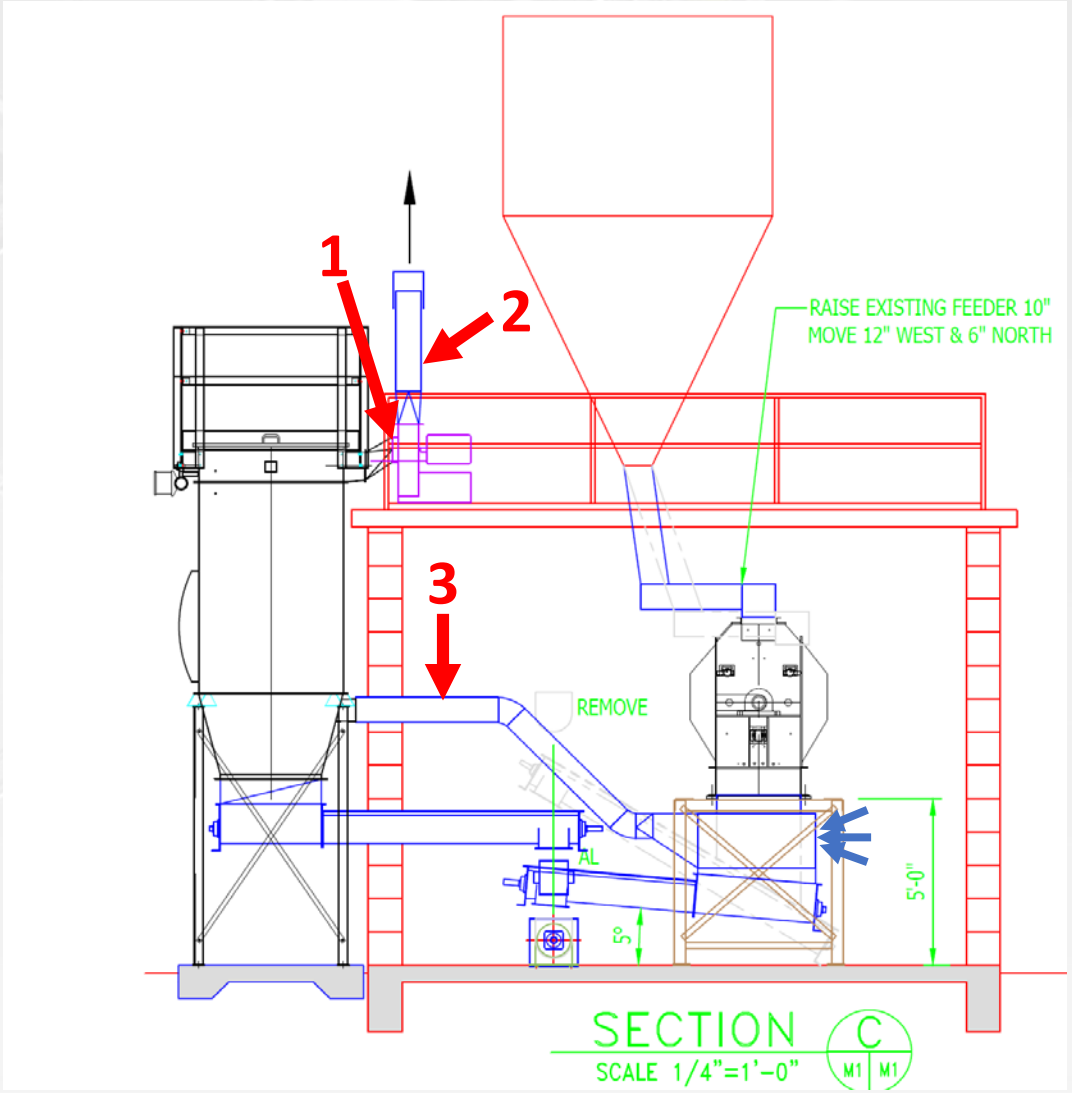
Interviews	Observations	Inspections	Measurements
Speak to key personnel with intimate system knowledge	View system during operation and downtime	Visual and audible inspection of system components	Airflow, velocity pressure and static pressure measurement

Process Overview

Interviews	Observations	Inspections	Measurements
Speak to key personnel with intimate system knowledge	View system during operation and downtime	Visual and audible inspection of system components	Airflow, velocity pressure and static pressure measurement

Example
Baseline Assessment

- Hammermill dust collection system
  - 1 dust collector
  - 1 fan
  - 1 collection point
  - 1 discharge system
- Fan measurements at points 1 & 2
- Velocity pressure and static pressure measurements at point 3



Deliverables

- **Measurements**
- Audit Report
- Flow diagram
- Isometric drawing

Pitot Tube Traverse Table for Duct Velocity Measurements

Date:	8/18/2016
Facility Name:	
Contact Name:	Bryan Watson
System Name:	Hammermill Dust Collection System
System Location:	Main Cyclone Outlet/DC Inlet
Test Point ID:	1

Airflow Temperature (°F)	84
System Elevation (ft)	121
Temperature Density Factor (df_T)	0.97
Elevation Density Factor (df_E)	1.00
Pressure Density Factor (df_P)	0.97
Moisture Density Factor (df_M)	1
Density Factor (df)	0.94

Diameter Duct (in)	24
Test Point SP (in w.g.)	-12.9
VP @ Duct Center (in w.g.)	1.9

		1st Traverse		2nd Traverse	
Traverse Point	Insertion Depth (in)	Velocity Pressure (in w.g.)	Velocity (FPM)	Velocity Pressure (in w.g.)	Velocity (FPM)
1	5/8	1.23	4583	1.3	4712
2	2	1.6	5227	1.5	5061
3	3 1/2	1.7	5388	1.8	5544
4	5 3/8	1.8	5544	1.8	5544
5	8 1/4	1.6	5227	1.6	5227
6	15 3/4	1.7	5388	1.7	5388
7	18 5/8	1.7	5388	1.9	5696
8	20 1/2	1.7	5388	1.7	5388
9	22	1.9	5696	1.8	5544
10	23 3/8	1.4	4889	1.2	4527
		Average	5272	Average	5263

How to Use

Input	Action
Input Static Pressure	Calculates df_P
Input Duct Diameter	Calculates Depth
Input Airflow Temperature	Calculates df_T
Input System Elevation	Calculates df_E
Input System Moisture	Calculates df_M

Insertion point shall be rounded to the nearest 1/8"
Input Velocity Pressures at each traverse point
Sheet calculates Velocities using formula:

$$V = 4005 * \sqrt{\frac{VP}{df}}$$

Average of all Velocities is used to calculate airflow in duct. Duct Diameter shall be the Inner Diameter (ID) of the duct. Actual calculation of Airflow (ACFM) is produced and take density factor corrections into account. Gas Constant for Ambient Air Only.

Variables	Value
Average Velocity Duct, V_d (FPM)	5267
Area Duct (ft^2)	3.142
Actual Airflow Duct (ACFM)	**16548**

Observations:

Hammermill #1 open and both hammermills were in operation

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Deliverables

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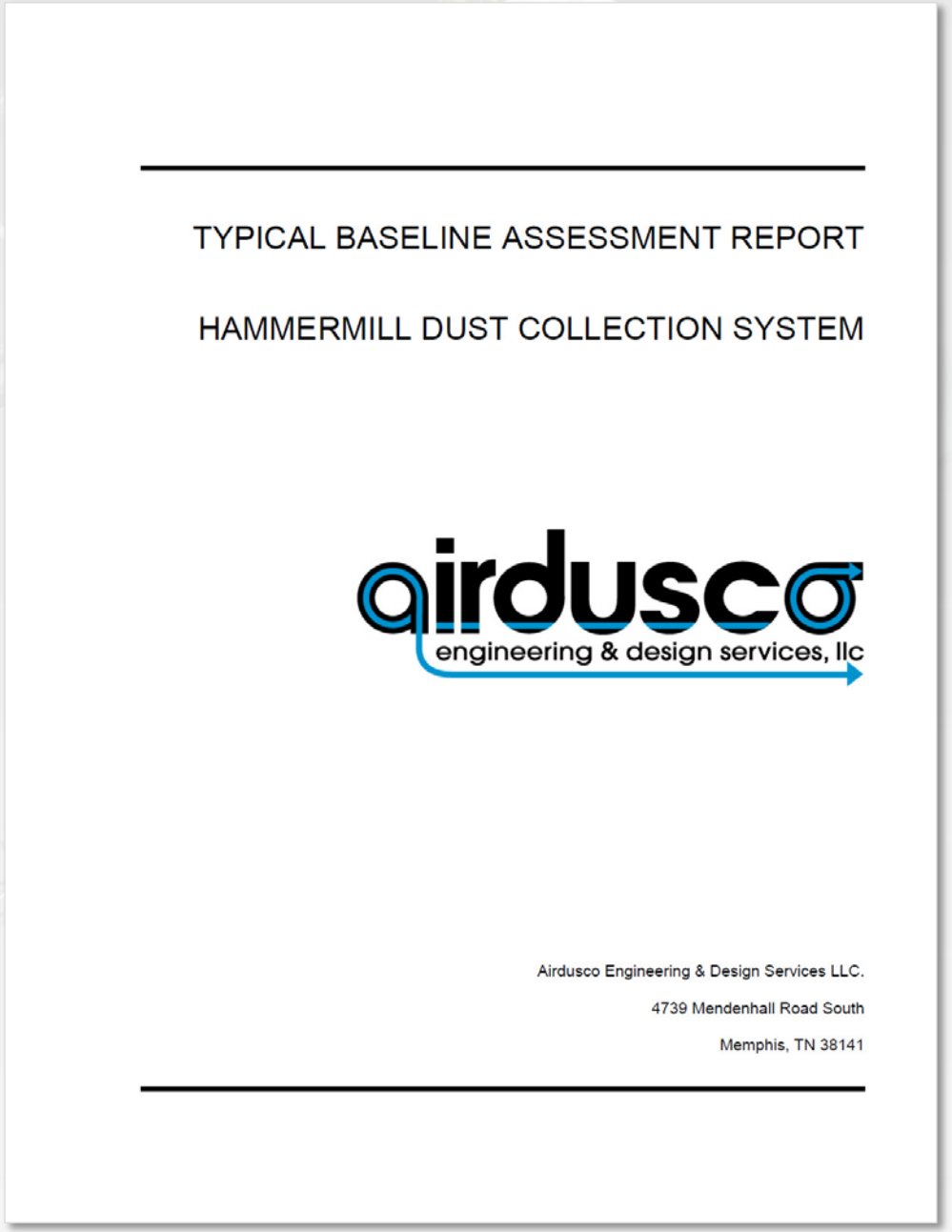

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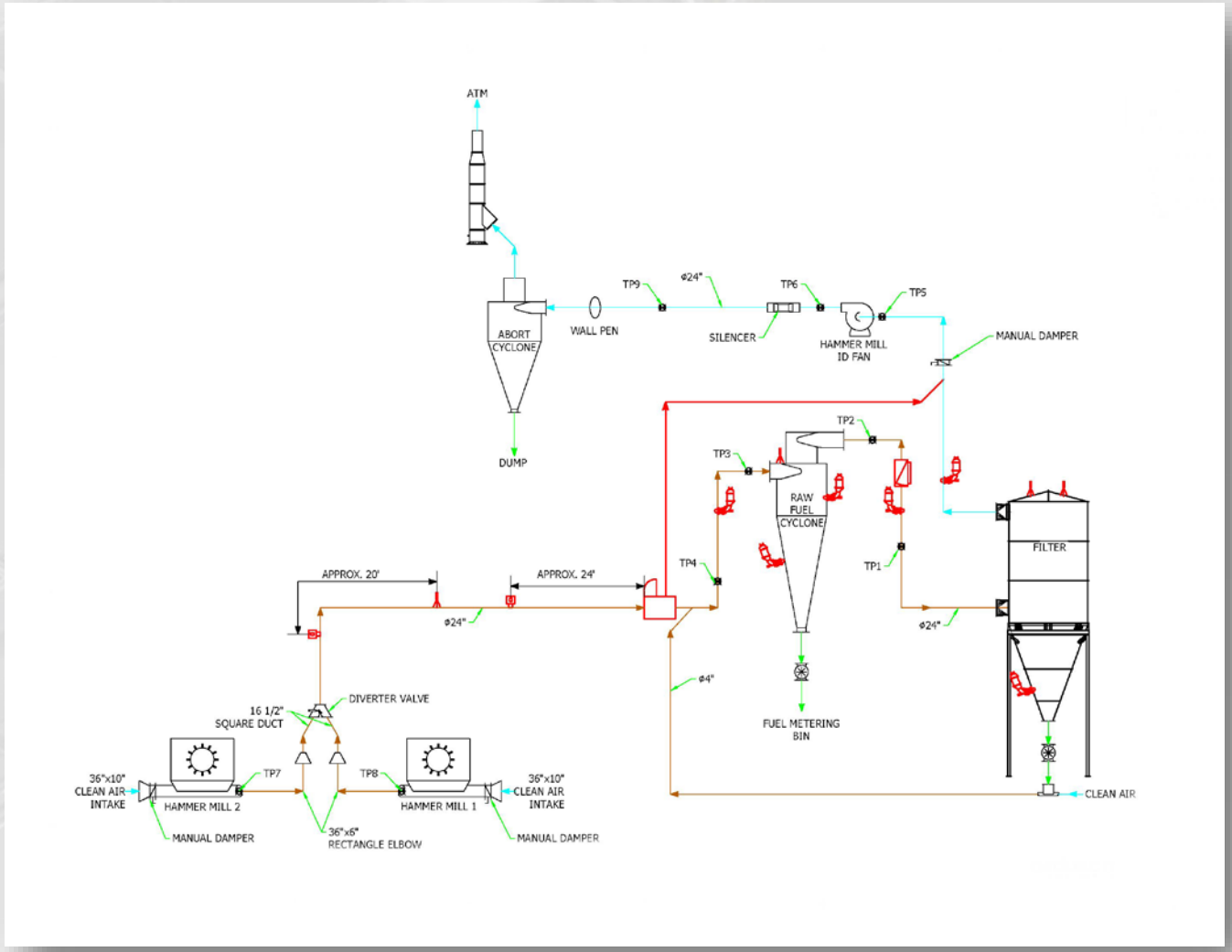

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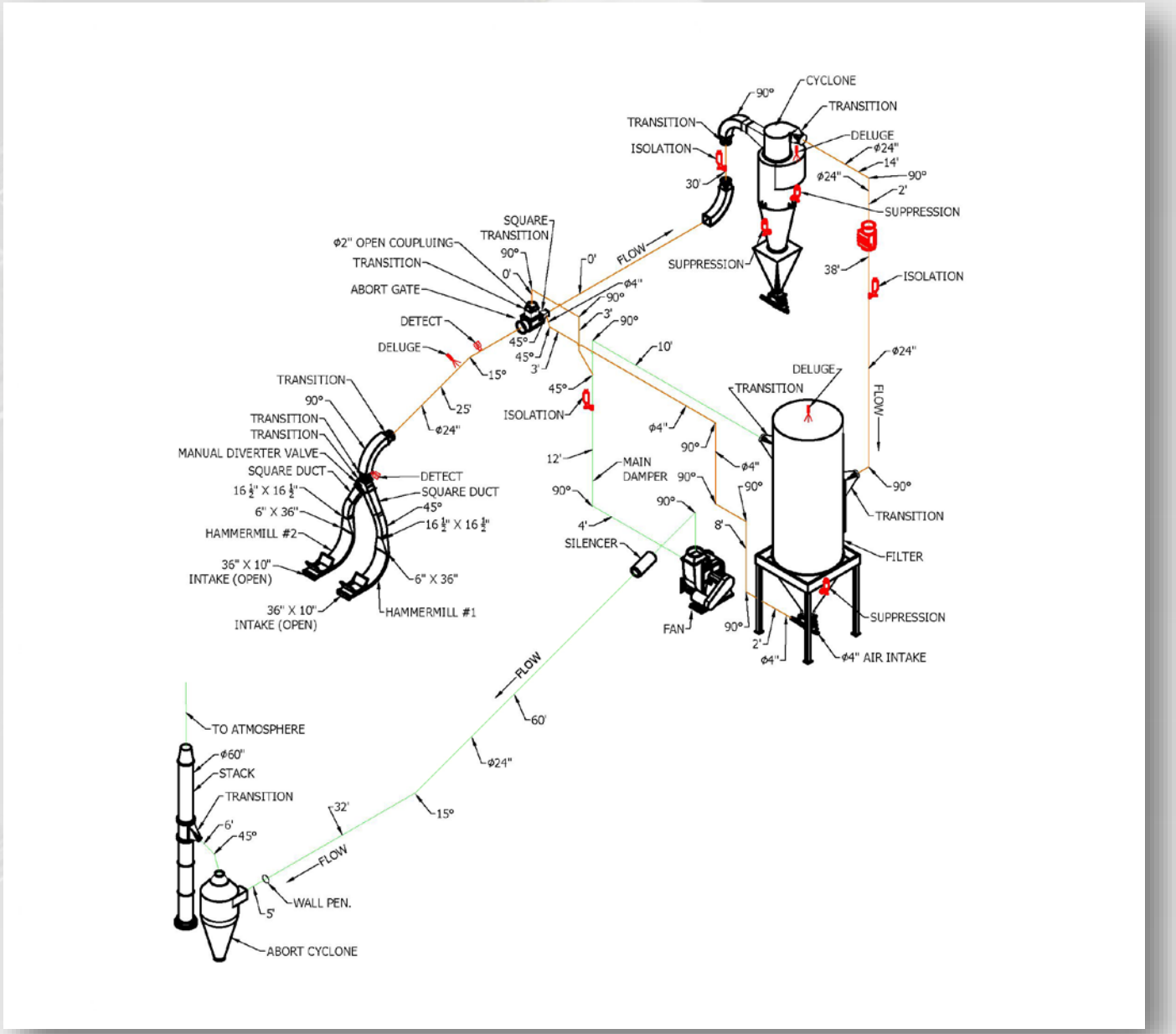

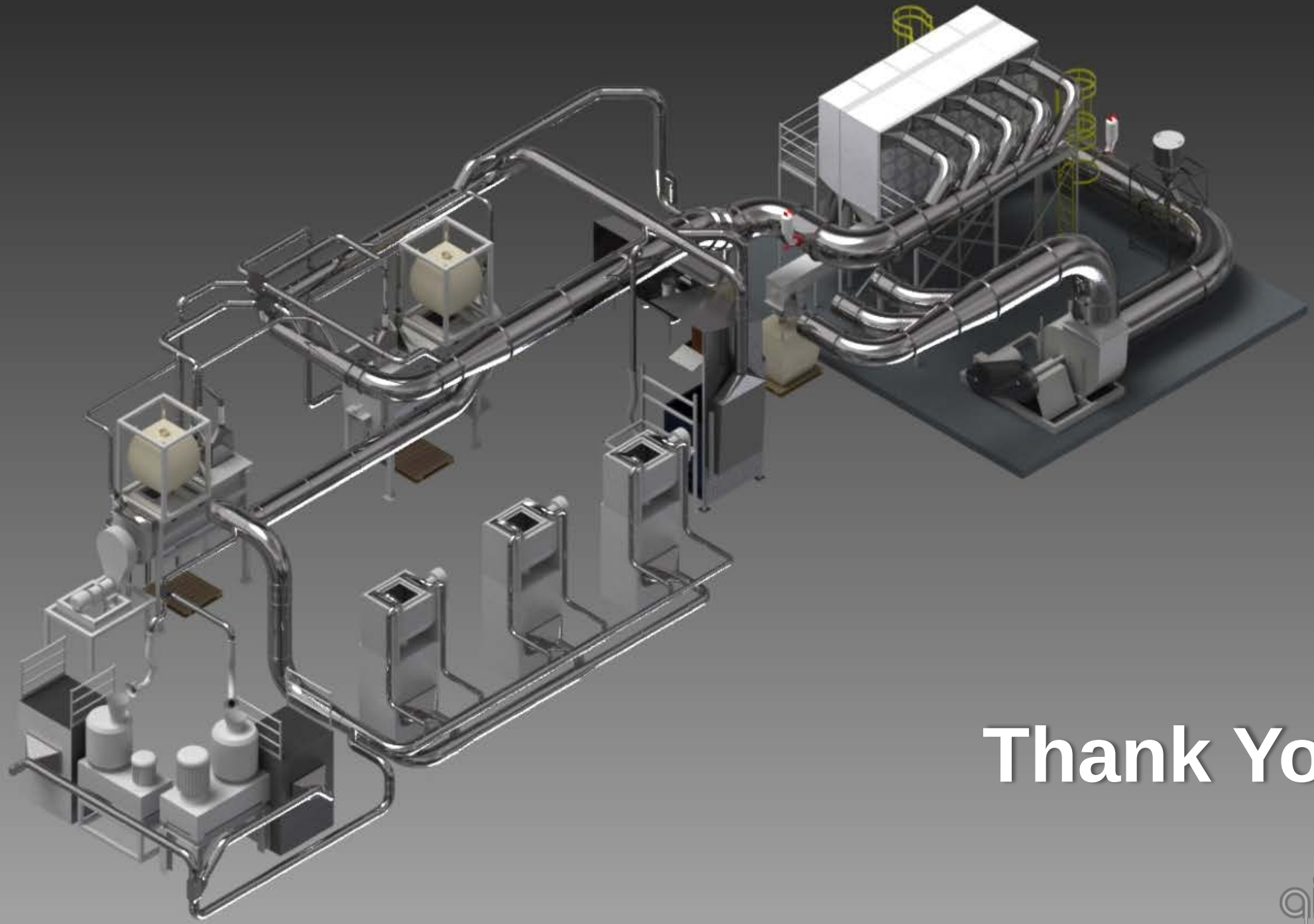

Thank You