

Valve Datasheet Management and Actuation for Emission Service

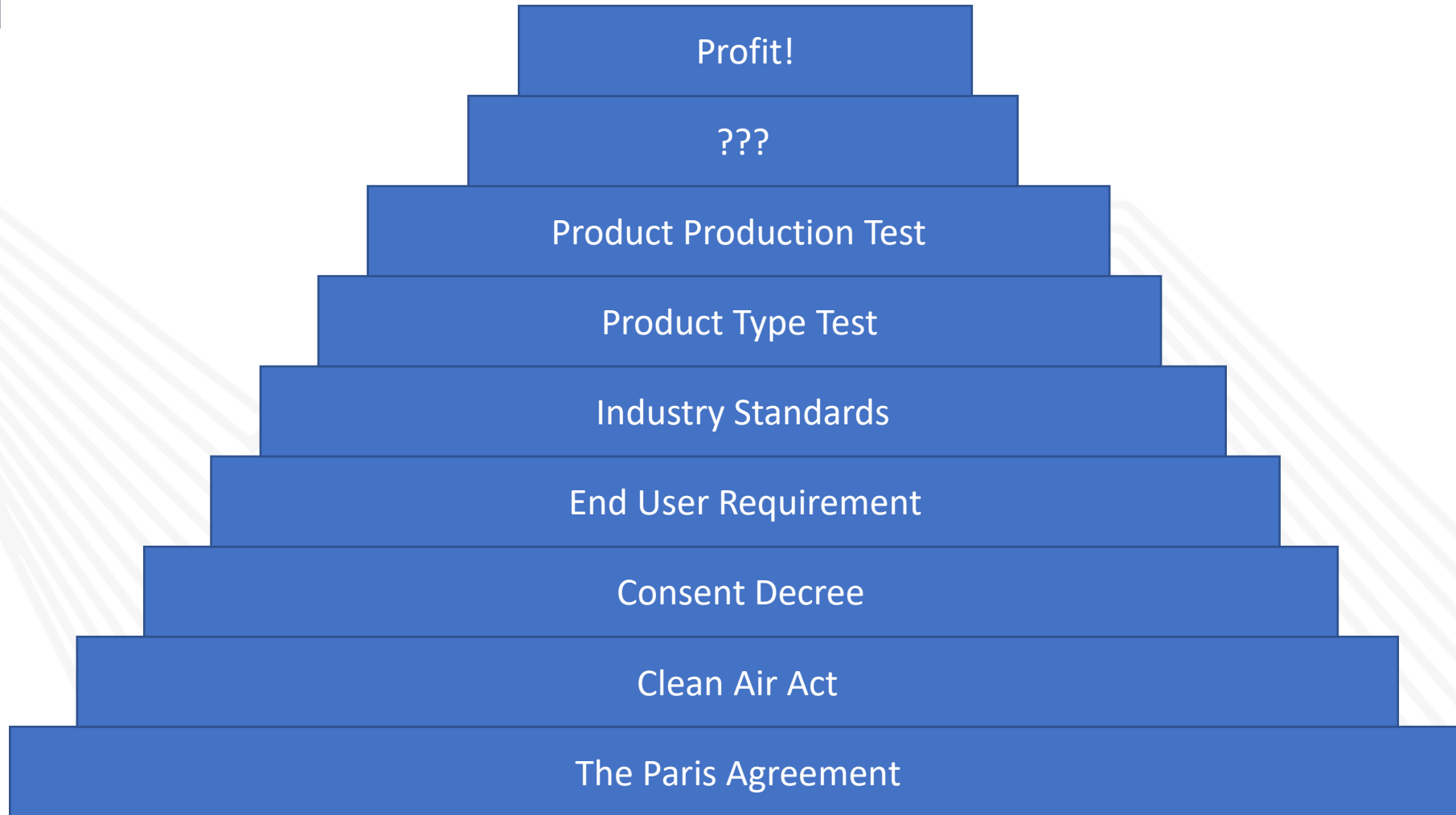
Luke Chou

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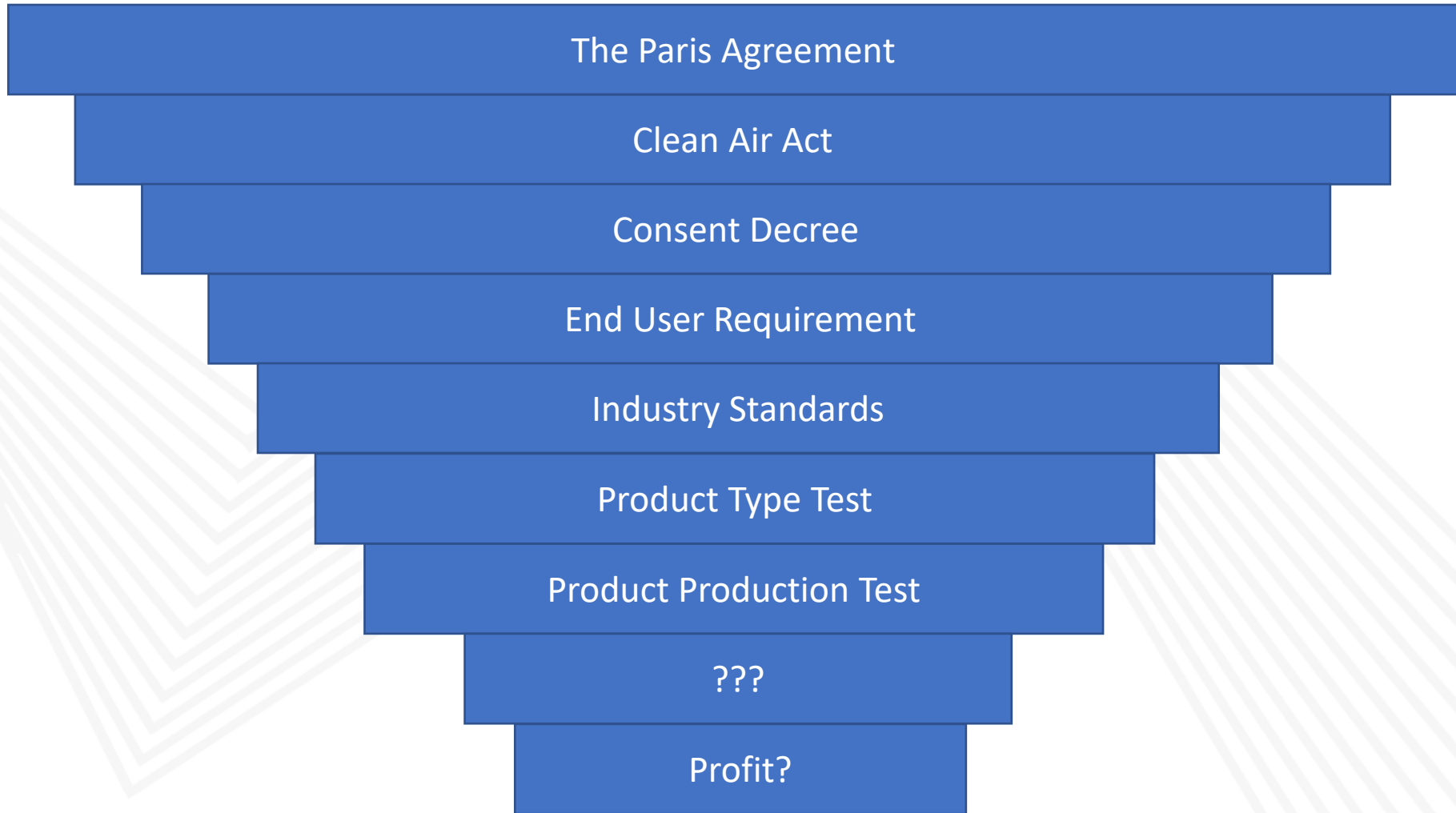
The Clean Air Strategy

2022



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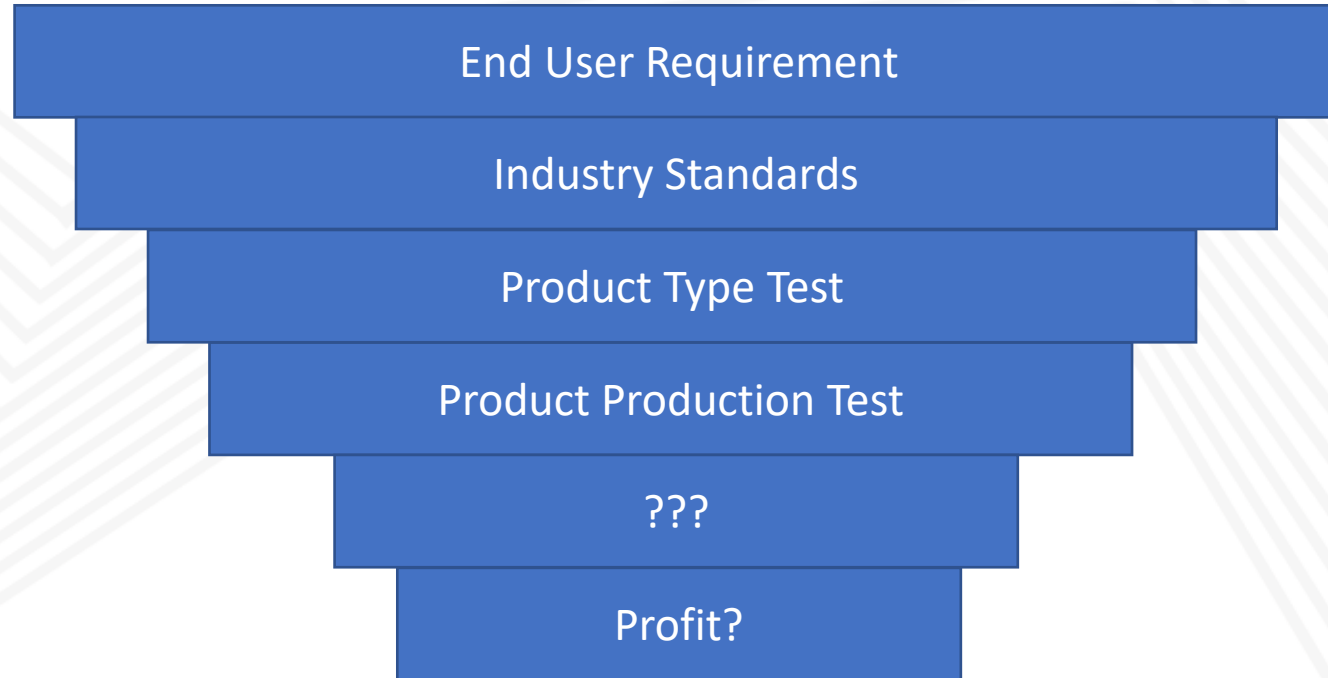
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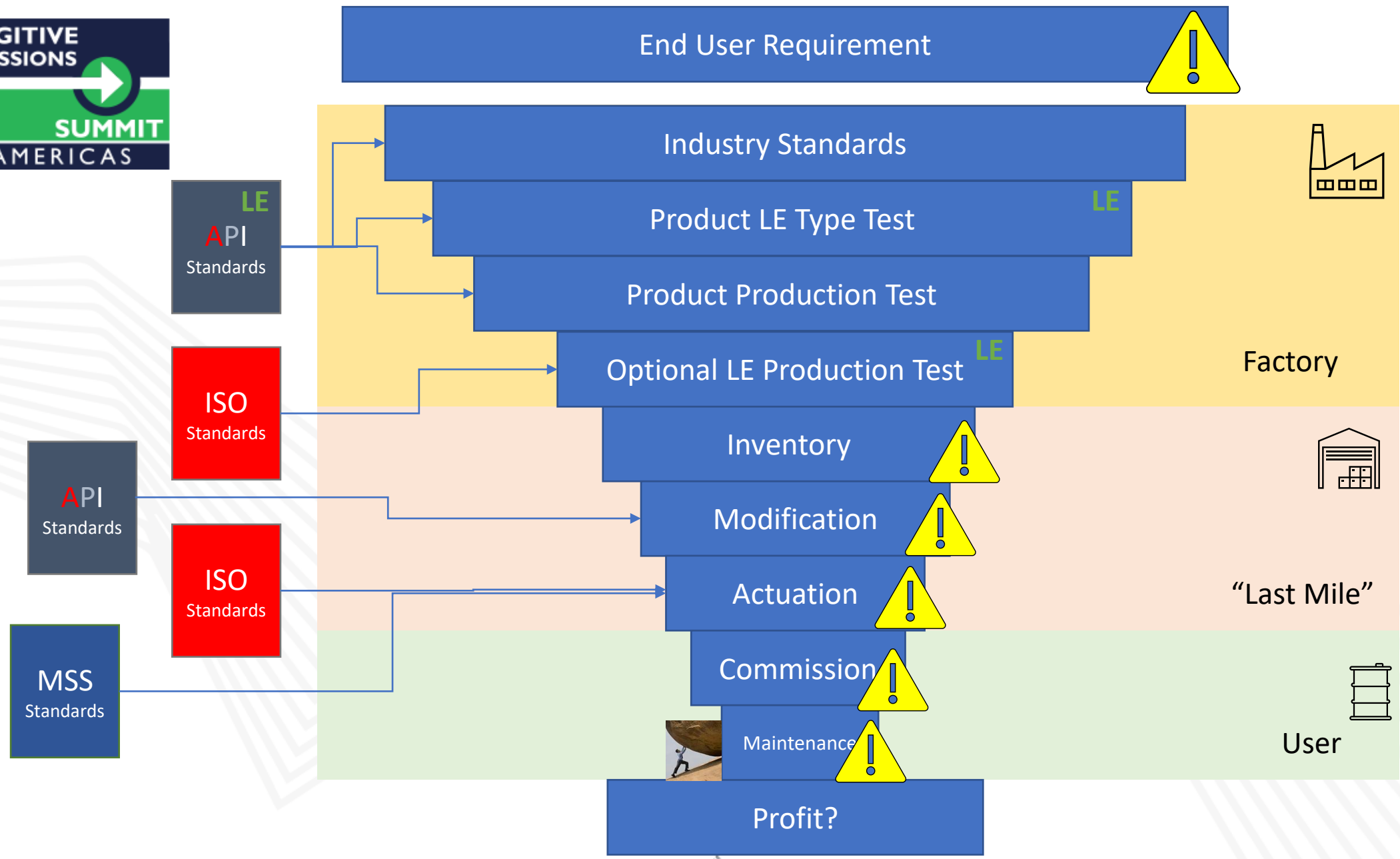


Looking only at what the end user want
And what they get

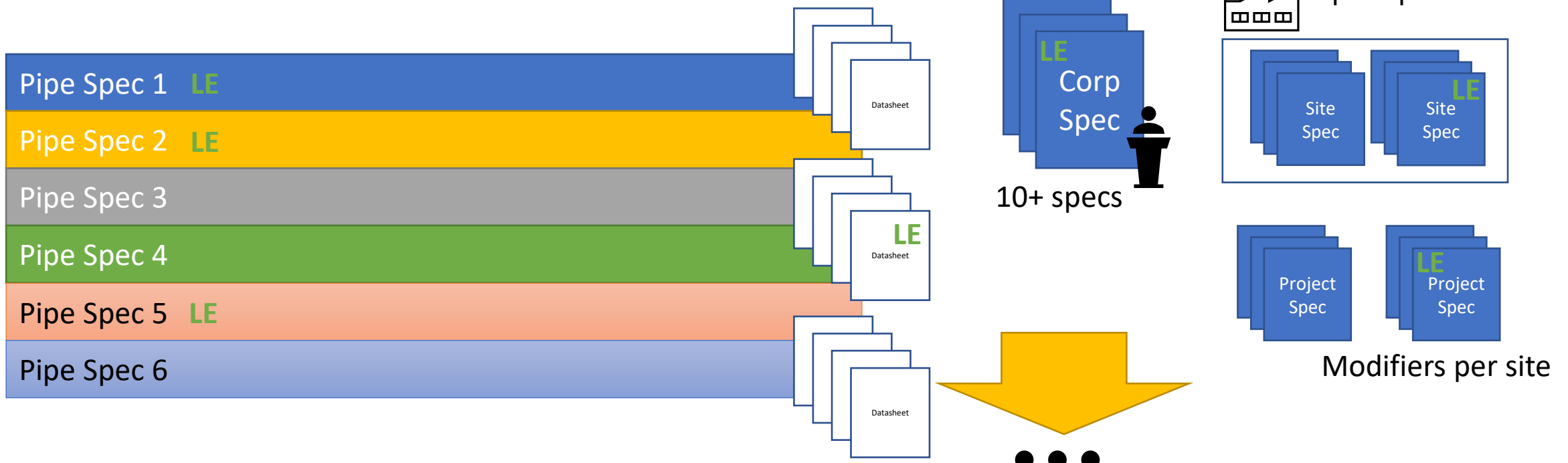


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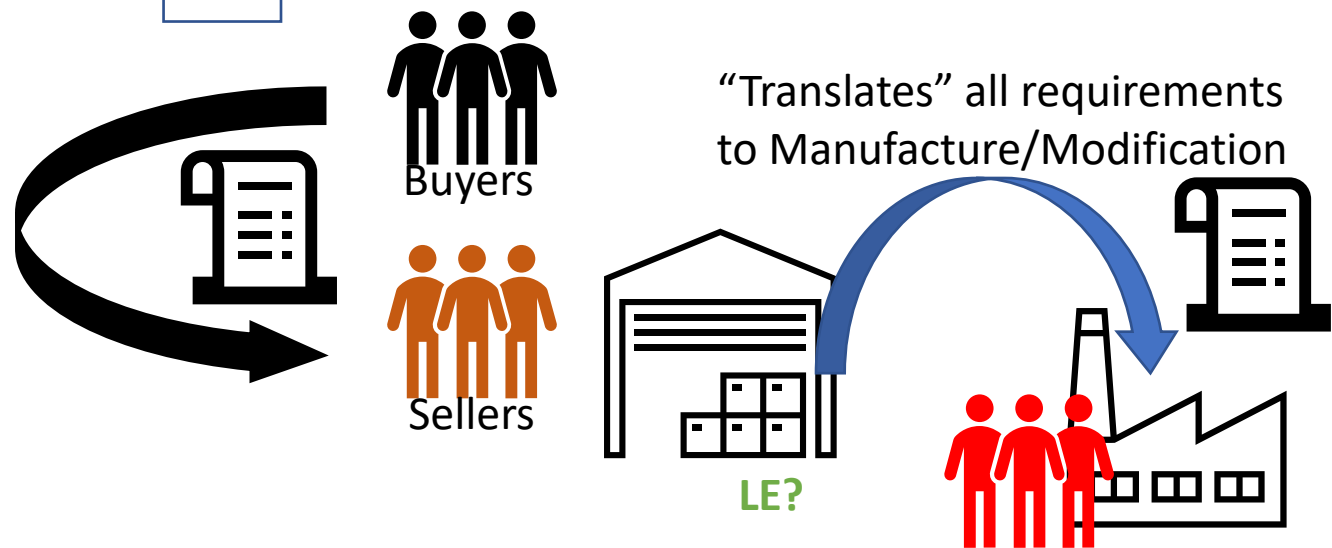




End User Requirements (Specification)



Translates all requirements to hundreds lines of PO



End User Requirements (Specification)

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- Internal Standards
 - Corporate Standard, leveraging API or other international standards
 - Site Modifier
 - Project Standards
- Valve description/datasheet up to date
- Issues
 - High amount of datasheet and specification upkeep
 - Balancing NDA and information transfer accuracy
 - Validation of information
 - Datasheet issue
 - High temperature application/Cryogenic application
 - Special applications (low usage codes)
- Habits
 - Replacement-in-kind

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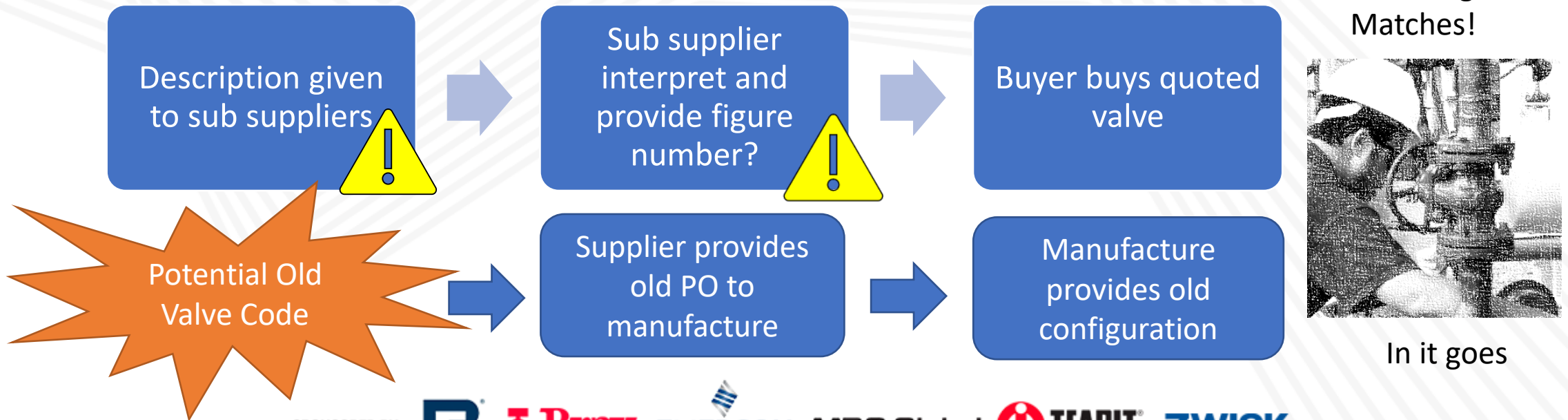
End User Requirements (Specification)

Additional Spec makes it to manufacture?

2022

- Ball Valve, ASME B16.34/16.10 Long Pattern, Class 150, [...] **Packing: Flexible Graphite-PTFE**, Operator: Lever, 1 inch and Under shall Have Round or Oval Handwheel, Fire Tested to API 607
- Ball Valve, ASME B16.34, Class 150, [...] **Packing: Flexible Graphite, Packing Type: Dual, Live Loaded Inconel Belleville Washers**, Operator: Weatherproof Gear, **for Low Emission Service**

generated valve tag CS150GARF01TW2-01



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End User Requirements (Specification)

- Current Solution?
 - Rely on International Standards as the safeguard for low emission requirement
 - Rely on distributor/supplier
 - Rely on modification facilities
 - Rely on distribution facilities
- Reality
 - Everyone follows the RFQ word for word (at best), with copy paste issues
 - When alternate proposal is be given, buyer often copy paste new description in PO
 - Whatever is available is provided and taken
 - Non-API valves are all suspect to mis-specification
- **Recommendation**
 - **“Low Emission Technology” requirement must show up on the purchase order line description, for *changes that may impact regulator requirements, without multi-layered references.***
 - **Specific inspection (Low E compliance check) or tagging requirement can be the trigger to ensure seller/buyer is aware.**
 - **Valve Tag Code should rev-up**
 - **Continue to leverage API standards**

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Product Actuation/Modification

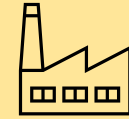
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End User Requirement



Industry Standards



Product LE Type Test

API Standards

Product Production Test



Torque Control?

Optional LE Production Test



LE verified

Inventory

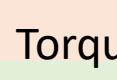


Modification



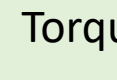
Torque Control?

Actuation



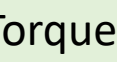
Torque Control?

Commission



Torque Control?

Maintenance



Torque Control?



Profit?

API Standards

ISO Standards

ISO Standards

MSS Standards

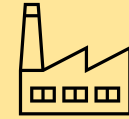
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End User Requirement



Industry Standards



Product LE Type Test

Product Production Test



Torque Control?

Optional LE Production Test



LE verified

Inventory

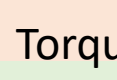


Modification



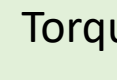
Torque Control?

Actuation



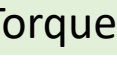
Torque Control?

Commission



Torque Control?

Maintenance



Torque Control?

Profit?



API Standards

ISO Standards

API Standards

ISO Standards

MSS Standards

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ISO 5210:2017

Industrial valves — Multi-turn actuator attachments

The attachment of the intermediate support to the valve is out of the scope of this document.

ISO 5211:2017

Industrial valves — Part-turn actuator attachments

The attachment of the intermediate support to the valve is out of the scope of this document.

ISO 5115:202X (Under development)

Industrial Valves – Part-turn valve actuation

MSS SP-101

Part-Turn Actuator Attachment

MSS SP-102

Multi Turn Valve Actuator Attachment

API 6DX: 2020

Standard for Actuators and Mounting Kit for Valves

[...] inclusive of mounting kit, installed on valves that conform to API Specification 6D

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Weakly Addressed

- **ISO 5210:2017 Multi**
 - Spigot optional on actuator, required on valve
- **ISO 5211:2017 Part**
 - Spigot optional on actuator, required on valve
- **API 6DX: 2020**
 - “Actuator and valve interface design shall minimize the misalignment or improper assembly of the actuator and/or mounting kit to the valve”
 - Note: Guidance [...] is provided in **MSS SP-101** [...]
 - “**mounting kit** shall ensure [...] parallelism of the mounting faces, concentricity of bolting, alignment of valve stem, coupling, and actuator drive, to **manufacturer’s standard**. [...] Note: Valves installed with horizontal stems can require additional support (e.g. spigots) to ensure accurate alignment [...] **during removal and refitting in field service**)

Addressed

- **ISO 5115:202X (Under development)**
 - “Shape of the intermediate support shall **permit** access to inspect and **adjust the valve packing** if the valve is so equipped.”
 - “On assemblies using a coupling, **check for alignment of valve stem** to actuator drive by verifying the coupling is free to move axially in both the fully open and closed positions. If the coupling is binding in either position, then it is not properly aligned.
 - “Fast operation less than 0,01 s per DN or 0,25 s per NPS may be detrimental to the reliability of the valve, actuator, and associated piping [...]”
 - **No stem seal testing, even as optional test**
- **MSS SP-101: 2014 Part and MSS SP-102: 1989 Multi**
 - the primary feature of concern are [...] **the pilot** [...]
 - Anywhere side loads are present, [...] **use of a pilot/dowels should be considered**
 - **Pilot optional on actuator**

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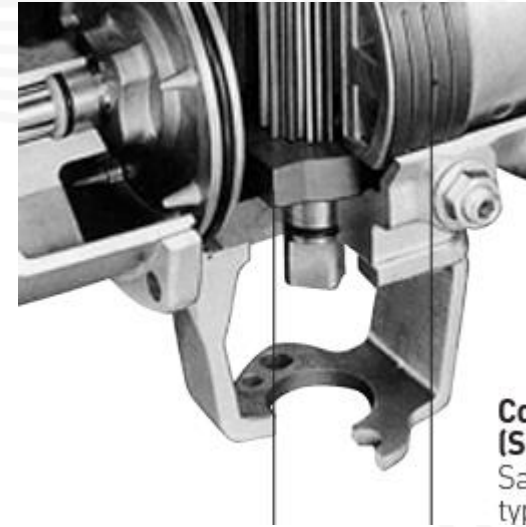
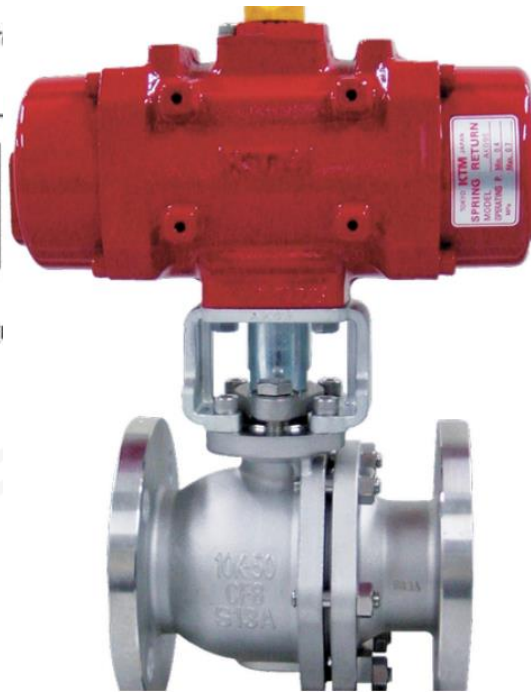
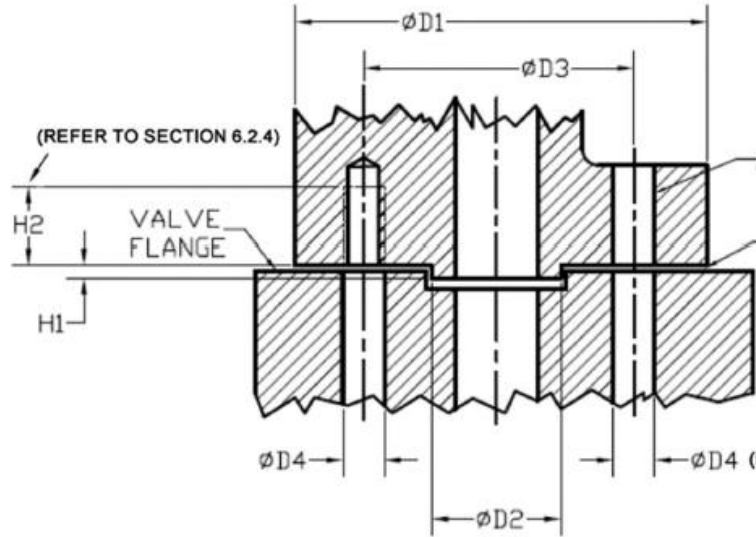
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Guidance on Actuation (Alignment/Emission)



- Many quarter turn actuator does not come with spigot
- Most mounting bracket does not have male spigot

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Guidance on Actuation (Alignment/Emission)

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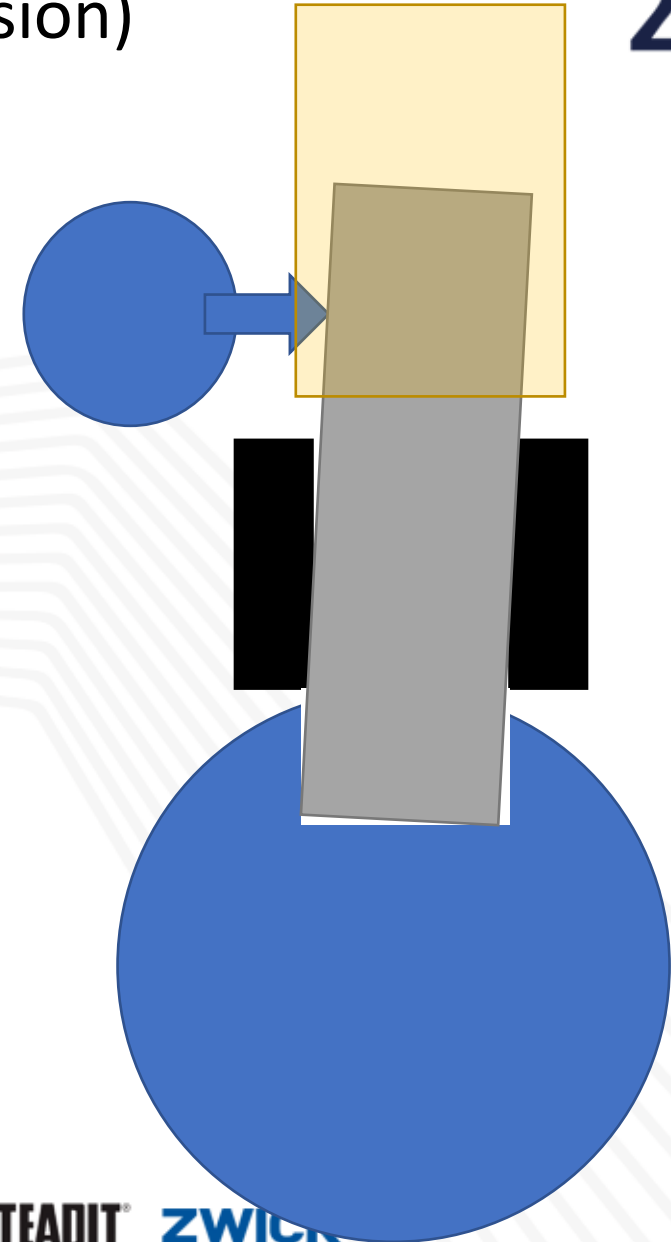
Published by Process Automation User's Association June 01, 2019

4.1.4 Drive train alignment Test

Measure and record the total indicator runout on the valve stem using a dial indicator. Measure when the assembly is in motion in both the open-to-close and the close-to-open direction. Measure directly on the valve stem. If the valve stem is not accessible, it is acceptable to take a reading on the coupling close to the valve stem connection. Please consult each valve manufacturer for their recommended total indicated runout / shaft deflection for their valve design.



Figure 4.1



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Actuation datasheets

CUSTOMER		SALES ORDER	
Name		OE / VA Number	/
PO Number		Unit Quantity / Sales	/
Project		Item Number	
Service		Rev. to Order Number	
VALVE []		SOLENOID []	
Type		Quantity	
Size			
Manufacturer			
Figure Number			
Press Class / End Conn.	/		
Body			
Ball / Plug / Disc Material		LIMIT SWITCH []	
Stem Material			
Seat / Sleeve Material	/		
PMI Required			
MTRs Required []			
Heat Numbers		FILTER / REGULATOR []	
ACTUATOR []		Regulator Mfg / Model	/
Manufacturer		Filter Mfg / Model	/
Model Number		HARDWARE []	
Fail Position			
Min. Air Supply			
Orientation			
Special			
SERIAL NUMBER(S)			
CYCLE TEST REQUIRED	CUSTOMER	ACTUAL	MISC ACCESSORIES []
Open Time (Sec.)			
Close Time (Sec.)			
Cycled Times			

- Focus on
 - Pressure
 - Stroke Time
 - Orientation
- Minimal focus on valve sealing performance

	INT		INT	APP
Dimensions Checked		Flange Protectors		DIME
Leak Check		Bug Screens		PIPIN
				WIRII
SHIP DATE				
Customer Required Date				
Customer Inspection Required				
				TEST []

End User Requirements (Specification)

2022

- **Recommendation**

- Actuation valve/package should include low emission check list
 - Torque values
 - Alignment method should be standardized
 - Stem Leak test
- Increase usage of centering spigot in specification

- **Future**

- Writing actuation assembly SCOPV API standard that can better control brackets fabrication and actuation process
- Add these procedures into PO requirement/datasheets

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Thank you

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