Advancements
in
Double Block-and-Bleed Performance and Reliability

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Stream Selection Background

- Select from an array of similar process samples for a single analyzer (CEM – CO, CO$_2$, SO$_2$, NO$_x$, …)
- Sample must be *timely* and *pure*
- To reduce mixing due to valve failure, standard selection designs use double block and bleed methods.
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to analyzer

to vent
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to analyzer

to vent

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Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to analyzer

to vent

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Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to analyzer

to vent

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Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to analyzer

to vent

- Timely

X - Pure
Double Block and Bleed – Cascade

Stream 1
Stream 2
Stream 3
to analyzer
to vent
Double Block and Bleed – Cascade

Stream 1

Stream 2

Stream 3

to vent

to analyzer
Double Block and Bleed – Cascade

Stream 1
Stream 2
Stream 3

to vent
to analyzer
Double Block and Bleed – Cascade

Stream 1
to analyzer

to vent

Stream 2

Stream 3
Double Block and Bleed – Cascade

Stream 1

Stream 2

Stream 3

to analyzer

to vent

X - Timely
✓ - Pure
Modular stream selection valves
TT2 and T2
Modular stream selection valves
SSV
SSV – Valve module and base
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to vent

to analyzer
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to vent

to analyzer

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Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to vent

to analyzer

IFPAC
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to vent

to analyzer

IFPAC
Double Block and Bleed – Traditional

Stream 1

Stream 2

Stream 3

to vent

to analyzer

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SSV – Valve module
SSV – Internal flow paths

Inlet section
Vent section
Outlet section
SSV – Inlet section

Inlet ports

Inlet ports
SSV – Vent section
SSV – Outlet section
SSV – Outlet section
SSV Features

Integrated Outlet Flow Loop
- Provides consistent flow regardless of how many streams are added
- Ensures fast efficient purging
SSV Features

• Double block-and-bleed function in one compact valve module
• System pressures to 250 psi, 500 psi option
• Temperatures to 300 °F
• 40 psi actuator pressure
• 316 SS construction, Viton elastomers
• 1/8” FNPT and ANSI/ISA 76.00.02 configurations
SSV Features

Unique vented air gap
- Prevents system media from entering air actuator
- Prevents air actuator gas from mixing with system media
- Optional threaded version available
SSV Features

Easy to assemble and maintain

– All process connections in the base block
– DBB Valve Module easily removed with two screws
– O-ring kits available
SSV Features

- Large diameter piston rises above cylinder
- Side of the piston is green
- Provides visual and tactile indication of open or closed
- Colored button on top for stream identification
Summary

• Stream Selection demands pure fluid provided in a timely fashion

• NeSSI moves components to modularization and miniaturization

• Swagelok’s SSV product provides pure samples at consistently high flow rates within a single modular position