

# Downhole Choke - Downhole Phase Control Using Interval Control Valve

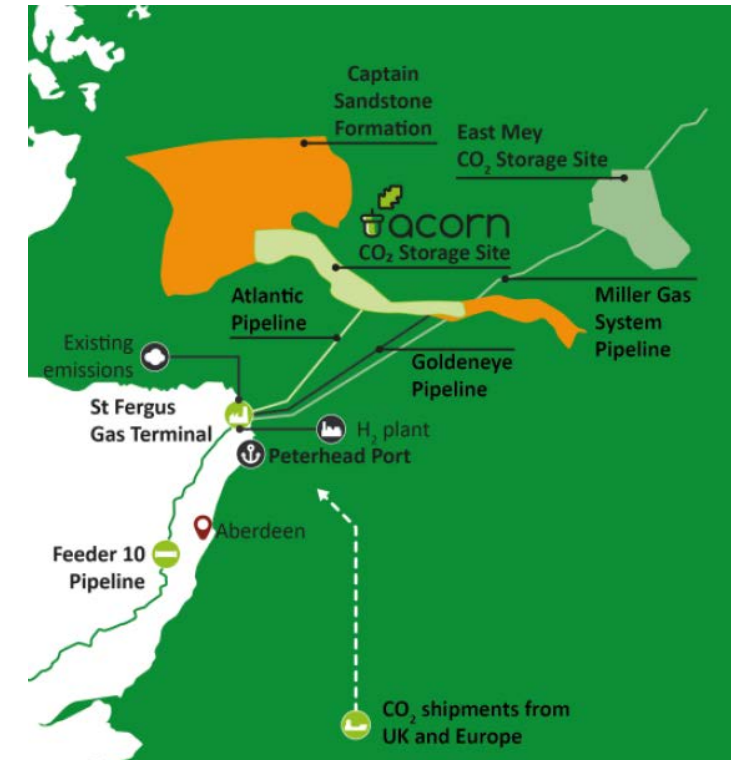
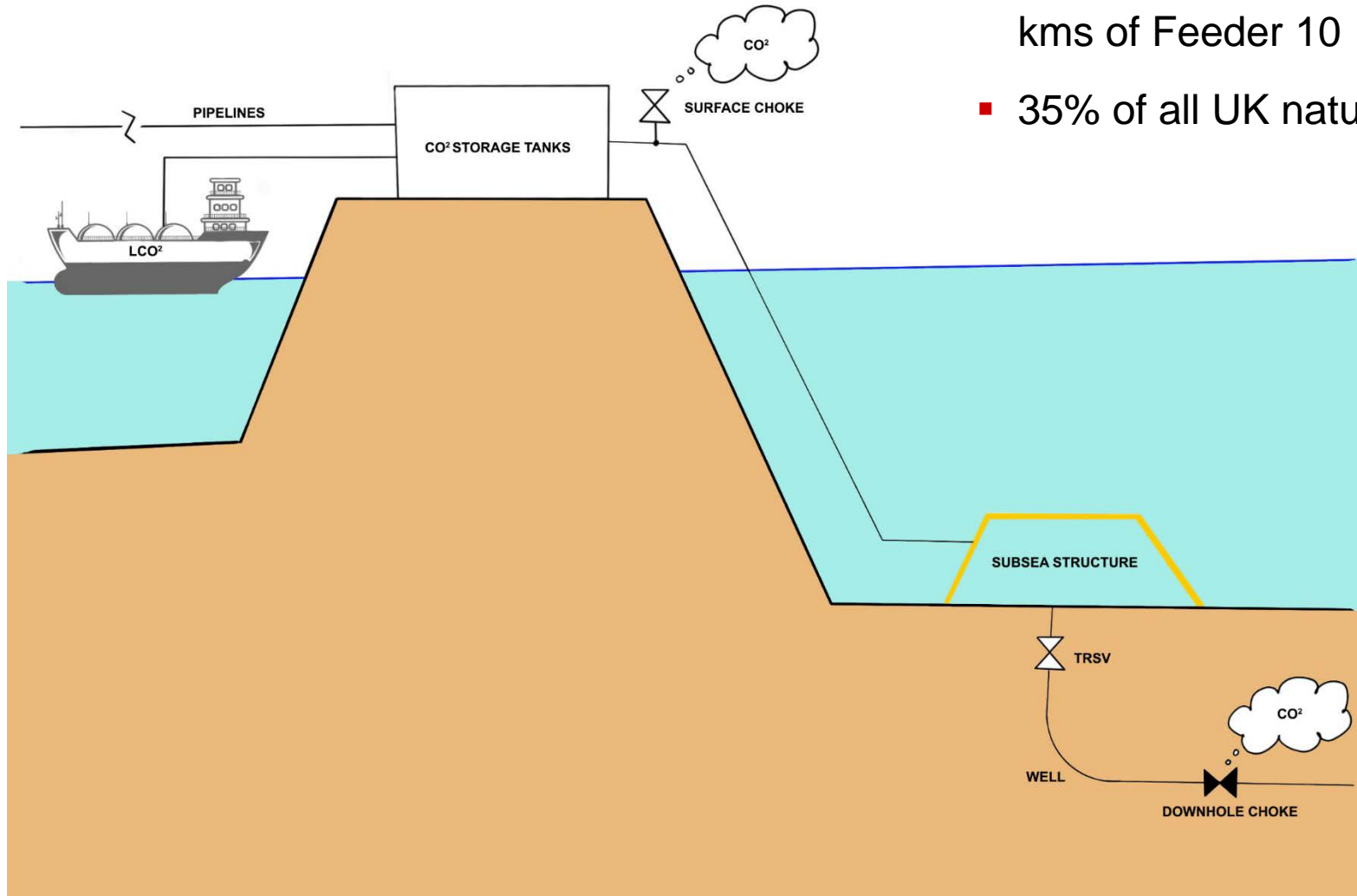
## Halliburton Completions

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# Key Elements of Acorn Infrastructure

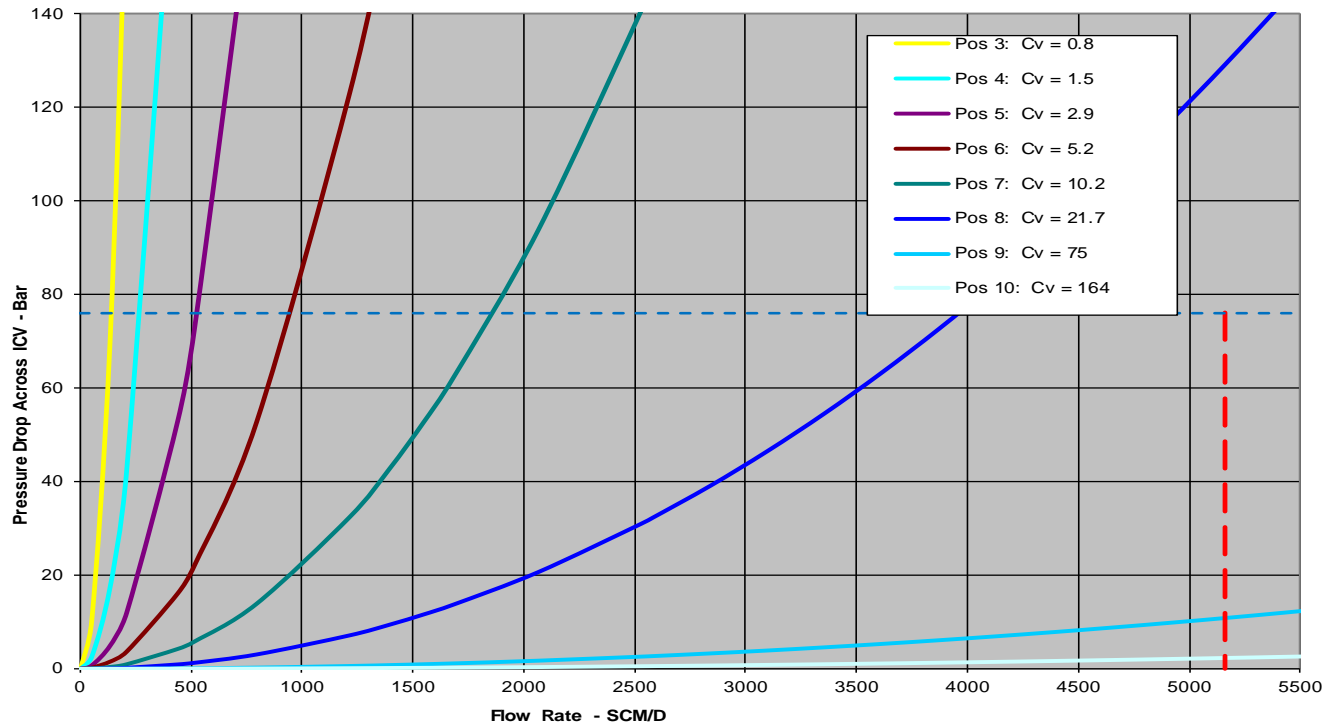
- 90% of Scotland's large site emissions are within 50 kms of Feeder 10
- 35% of all UK natural gas comes onshore at St. Fergus



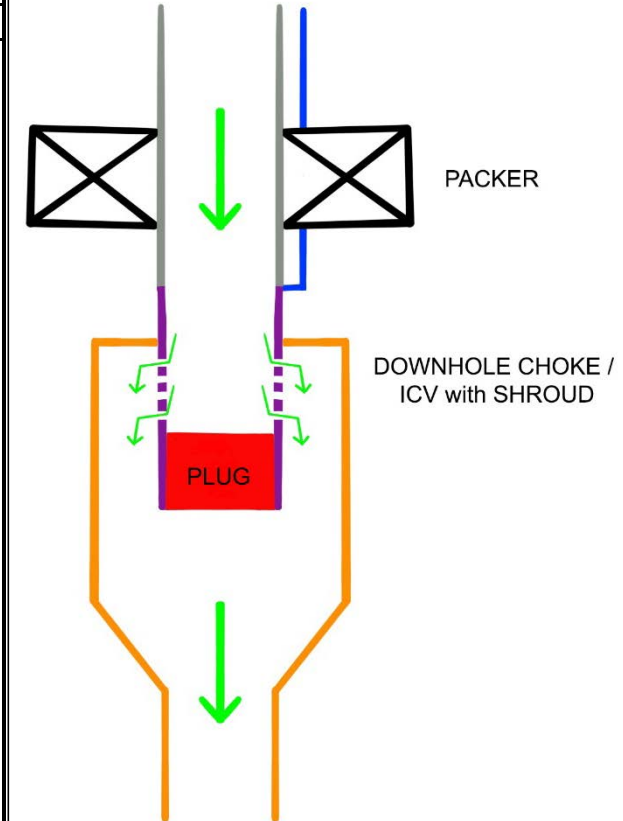
# Downhole Phase Control: 3-1/2" HS-ICV Flow Modelling - 10°C BHT, 980kg/m<sup>3</sup>

Product Integration Part Number			API 14E C Factor <b>400</b>	Water Density <b>0.98</b>	Max Valve dP <b>138 Bar</b>	C02 Density kg/m <sup>3</sup> <b>980</b>	Choke Trim Part No. <b>3-1/2 HS 315955-05</b>	Min Valve ID - in <b>2.750</b>
Product SAP Number:	SAP Rev:	Env. Rev:	Flow -Wetted Steel Type: <b>13% Cr</b>	Upstream Pressure <b>80 Bar</b>	Temp <b>15 C</b>	Min Flow Area	Valve ID - in2 <b>5.940</b>	Shroud Area - in2 <b>-</b>

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Valve Position	Max dP Bar	Zone Max Flow SCM/D
3	76	189
4	76	378
5	76	707
6	76	1285
7	76	2503
8	76	5160
9	11	5160
10	2	5160

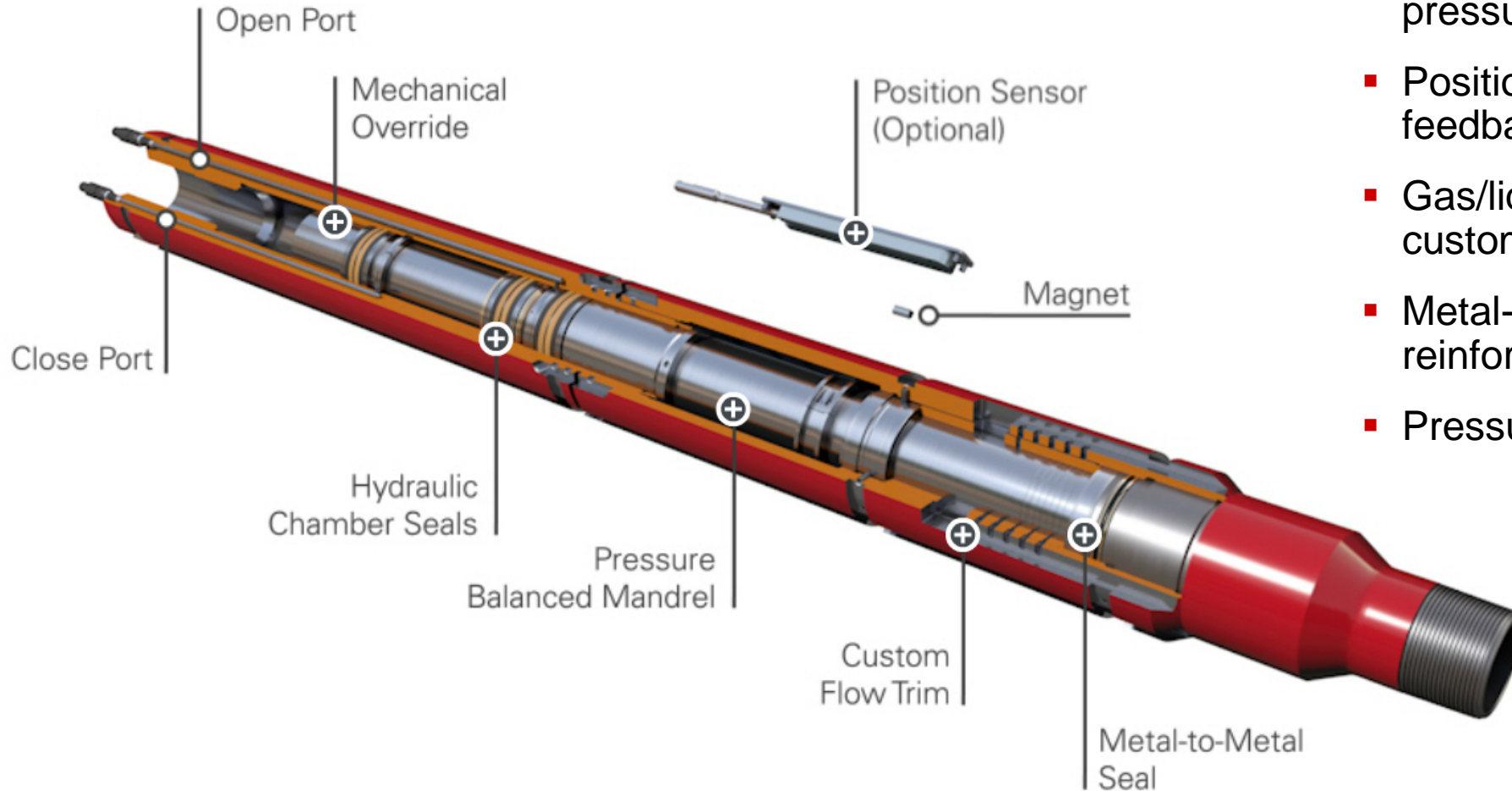


Notes:

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# Interval Control Valve (HS-ICV) – Downhole Choke



- Designed for HPHT applications
- 2,000 psi unloading differential pressure during injection
- Position sensor (PSA) for real-time feedback
- Gas/liquid tungsten carbide customized flow trim
- Metal-to-metal seal positively reinforced by differential pressure
- Pressure-balanced mandrel

# Conclusion

- ICV/Downhole Choke facilitates the flexibility required to provide the required back pressure in the well at variable rates. This can be used to manage the CO2 phase at surface.
- The valve has an extensive run history and proven field track record.
- The UK has a highly experienced team of project managers, engineers, technicians and support infrastructure to reliably deliver 'Intelligent Completion' projects such as this one.

Note: CO2 completions are not the same as standard completions.

SmartWell® Completions	
Systems installed	954
Zones controlled	2392
Production wells	795
Injection wells	159
Environments	
Land wells	245
Platform wells	399
Subsea wells*	310
Breadth	
Companies	49
Countries	33

# THANK YOU



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**THANK YOU**

