IVS 2019 - Industrial Valve Summit Conference
Bergamo (Italy) - May 22/23, 2019

Fugitive Emissions Detection Gearbox

A new product to contain and detect F.E. from valves

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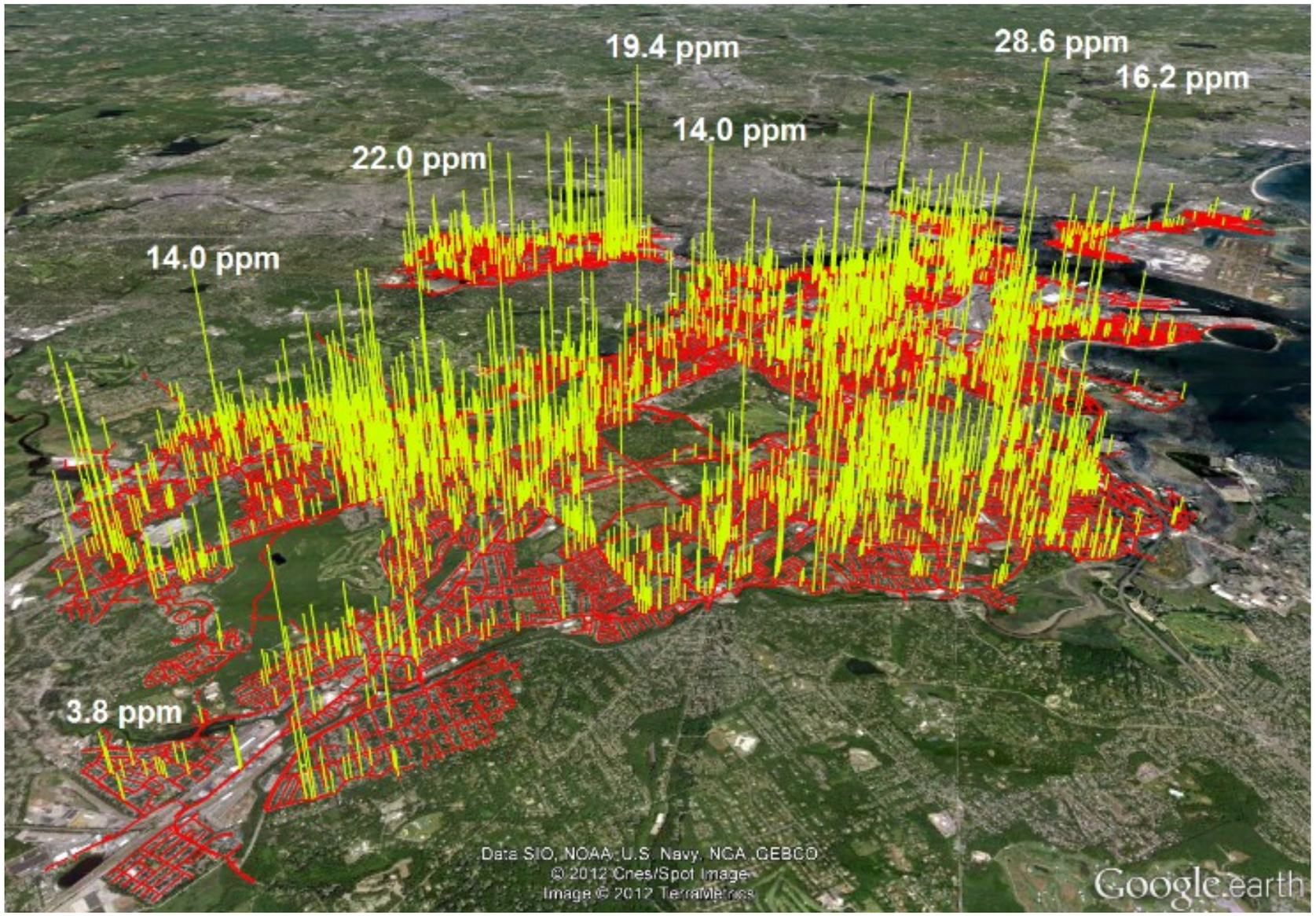
What are Fugitive Emissions?

"Emissions to the atmosphere caused by a loss of tightness of an item which is designed to be tight"

European standard EN15446:2008
Fugitive and diffuse emissions of common concern to industry sectors

What are Fugitive Emissions?



Over 3000 methane leaks were discovered (yellow) over Boston's 785 mile road network (red) in a 2012 study

***Source**: Mapping urban pipeline leaks: Methane leaks across Boston, Boston University*

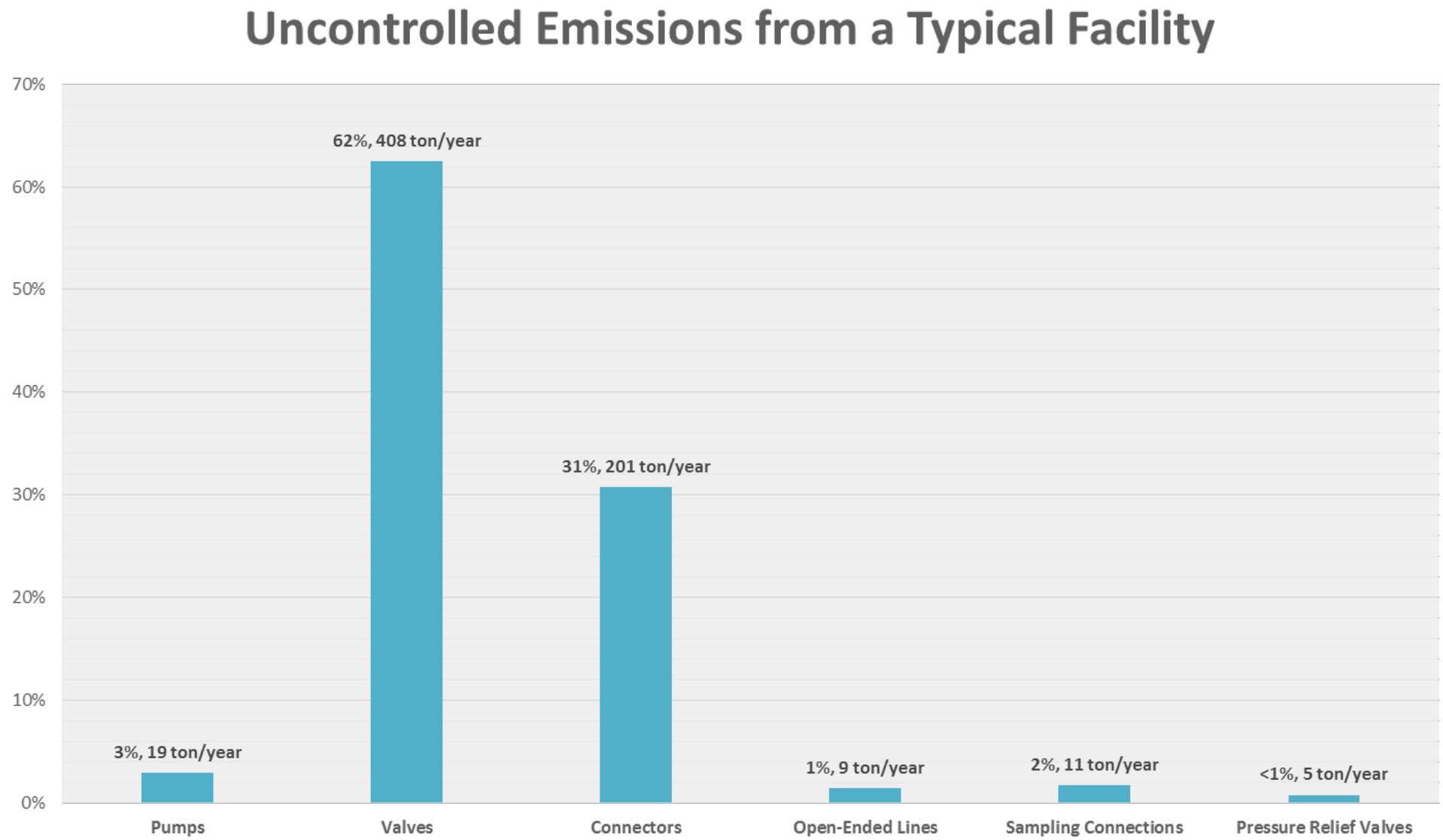
Fugitive Emissions from Valves

Equipment Count at a Typical Refinery or Chemical Plant

Component	Range	Average
Pumps	10 - 360	100
Valves	150 - 46,000	7,400
Connectors	600 - 60,000	12,000
Open-Ended Lines	1 - 1,600	560
Sampling Connections	20 - 200	80
Pressure Relief Valves	5 - 360	90

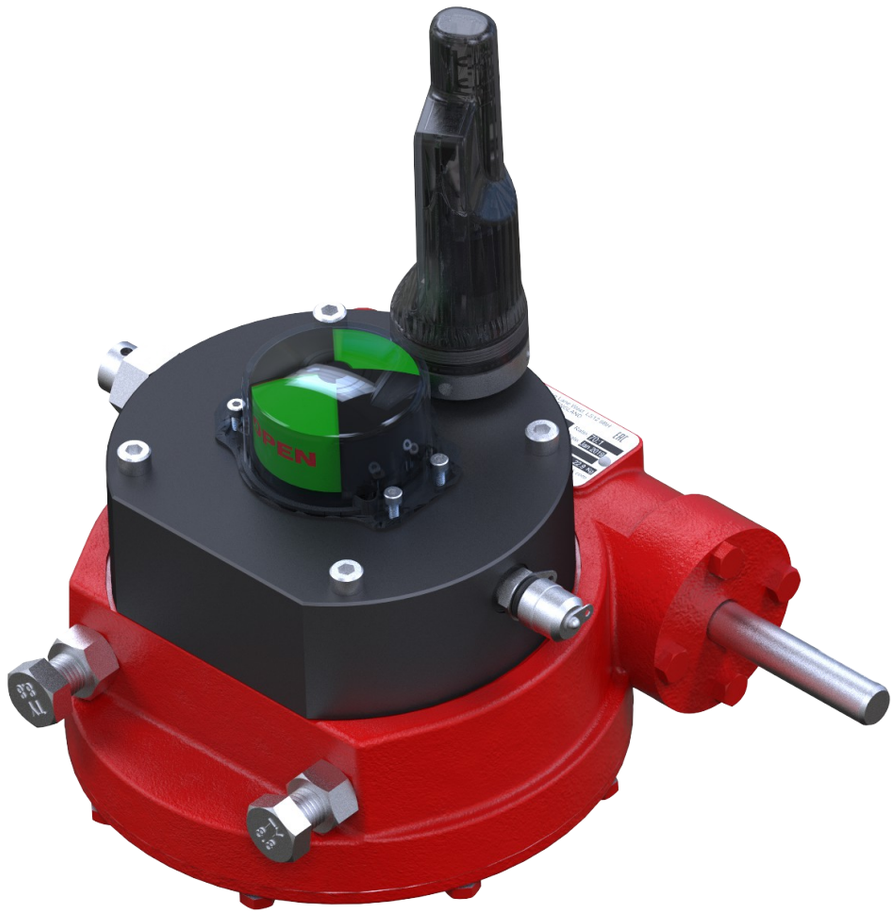
***Source**: Leak Detection and Repair: A Best Practices Guide, Environmental Protection Agency (EPA)*

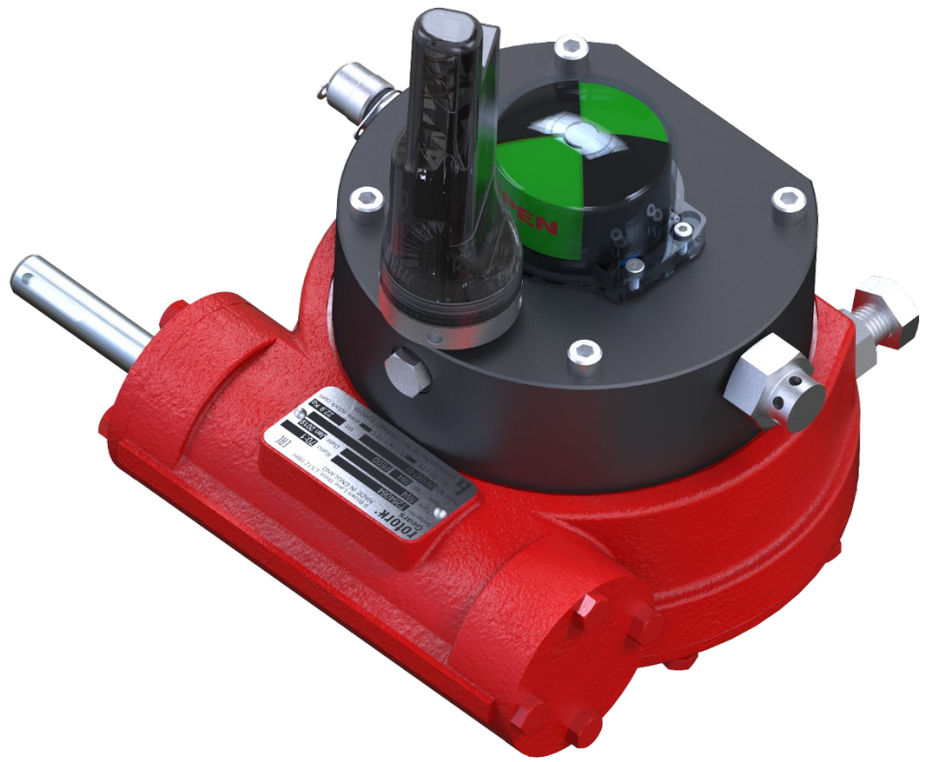
Fugitive Emissions from Valves



Mitigating Fugitive Emissions

Our Solution: Fugitive Emissions Detector Gearbox





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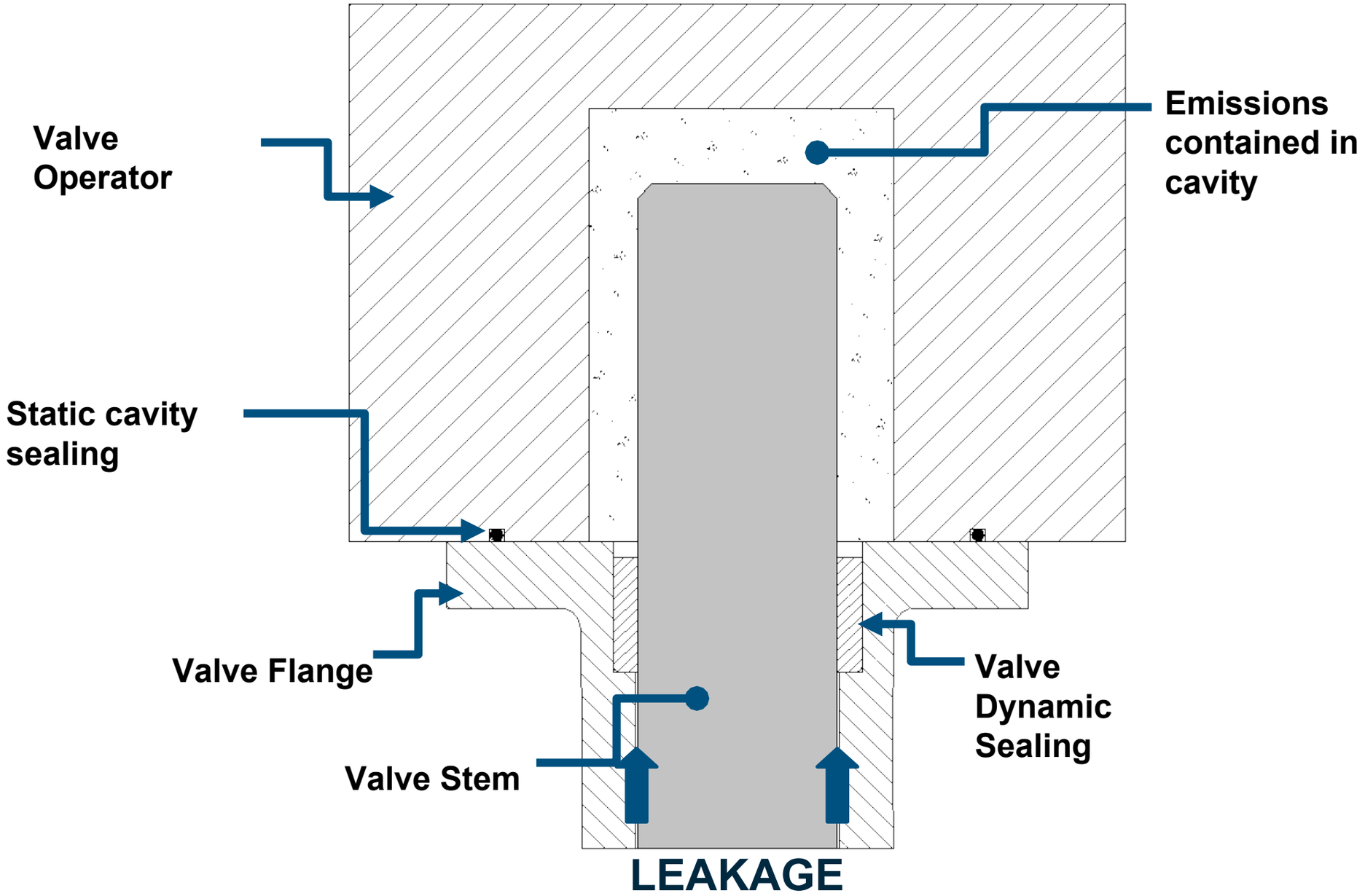

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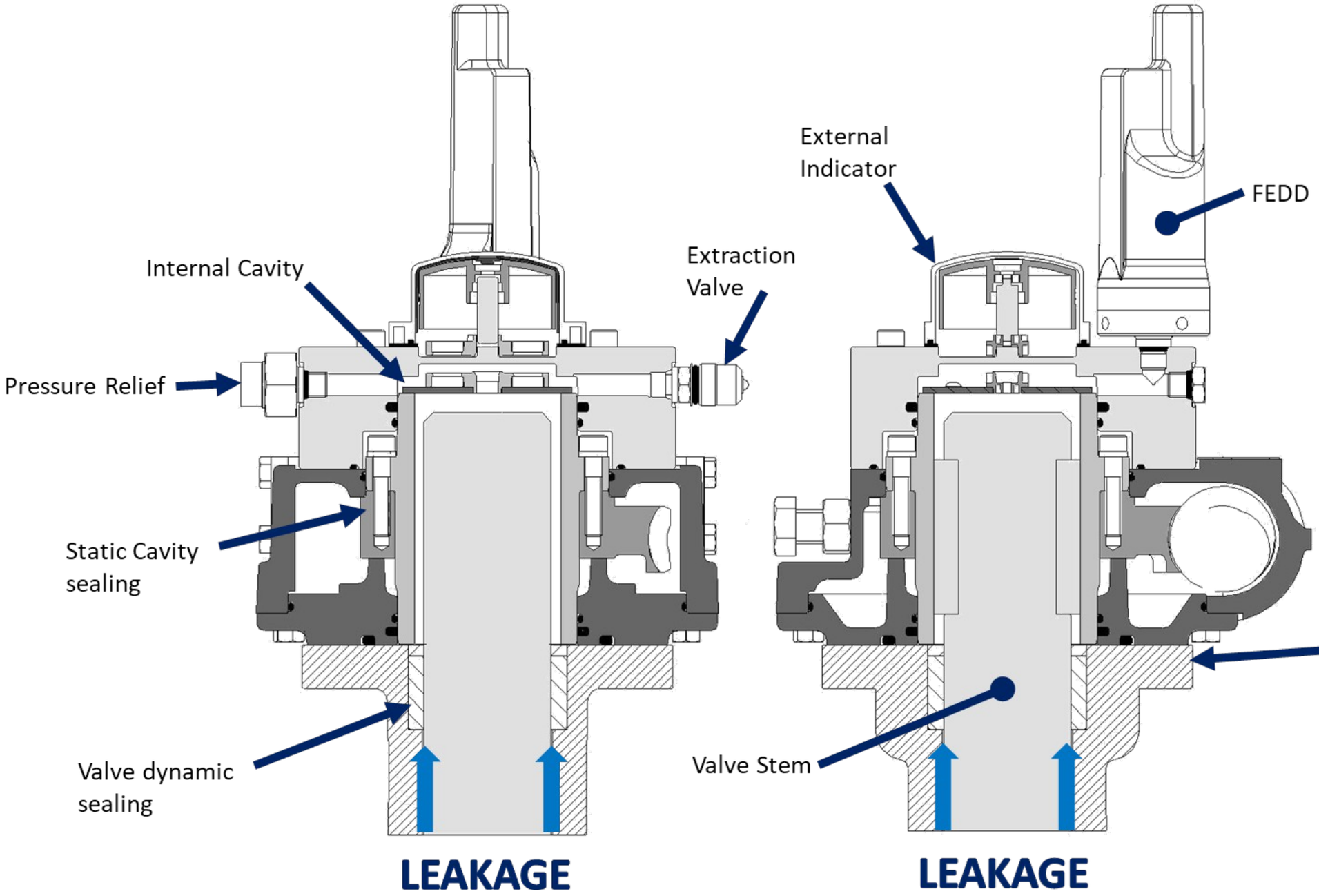

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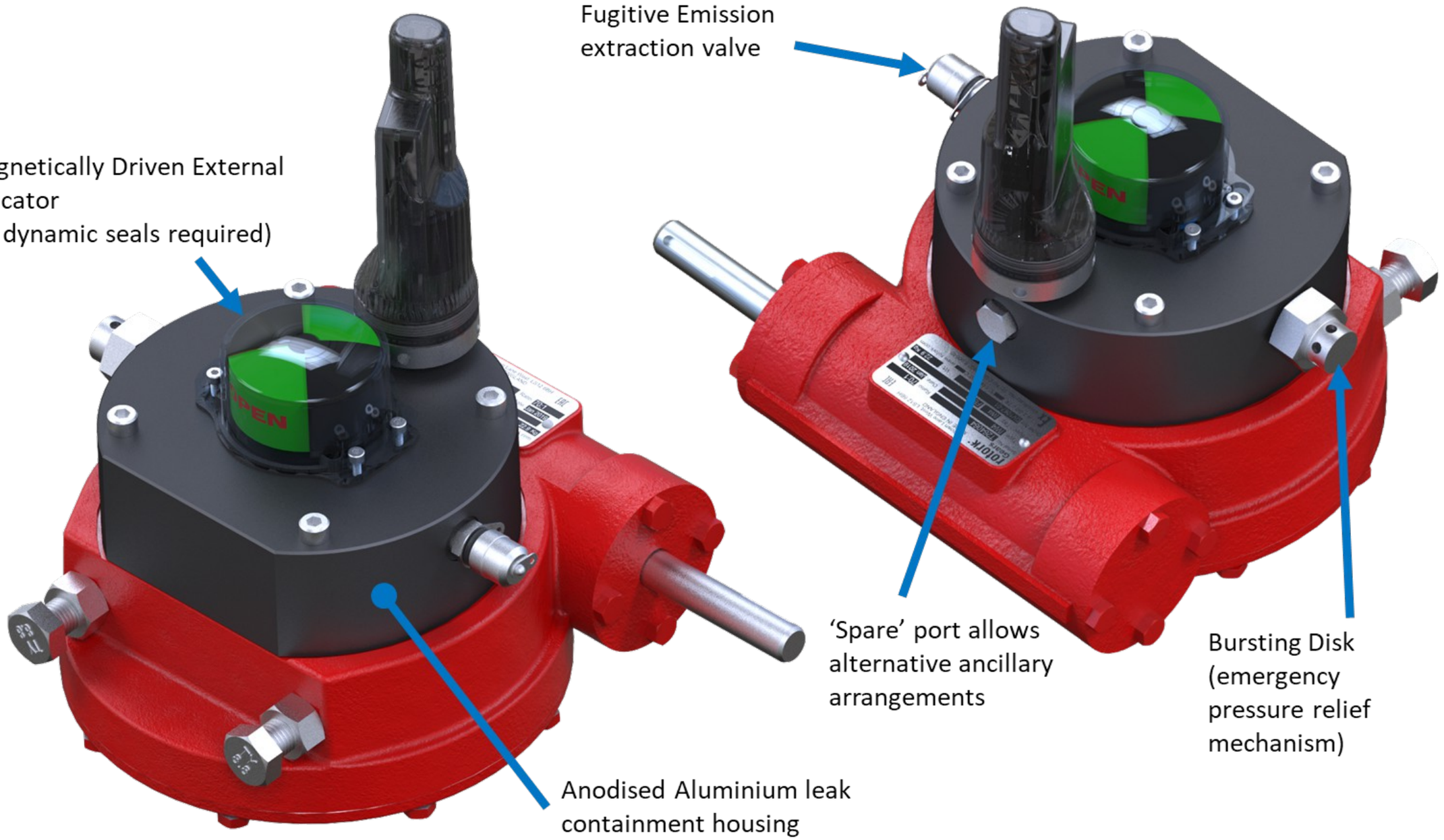

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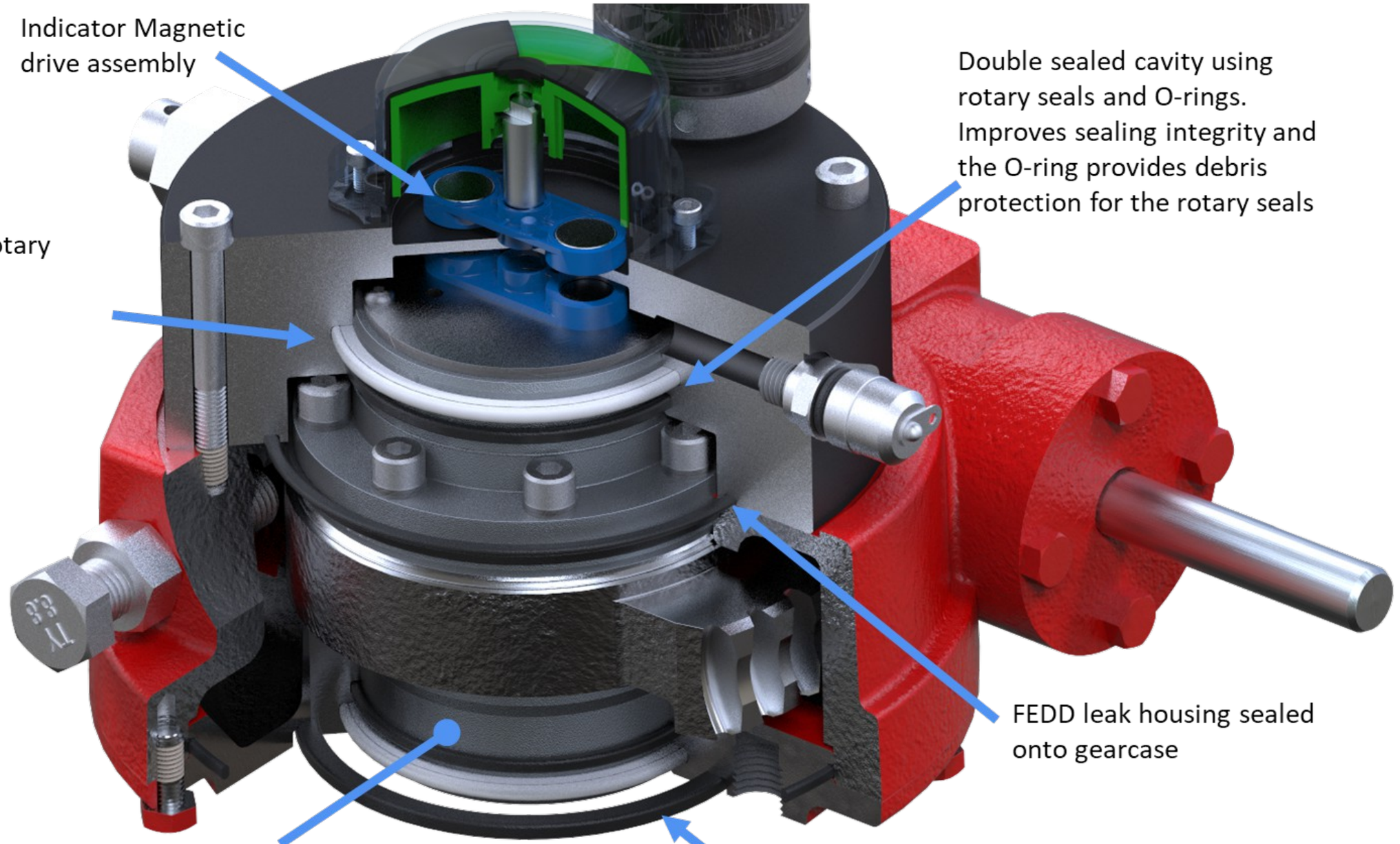
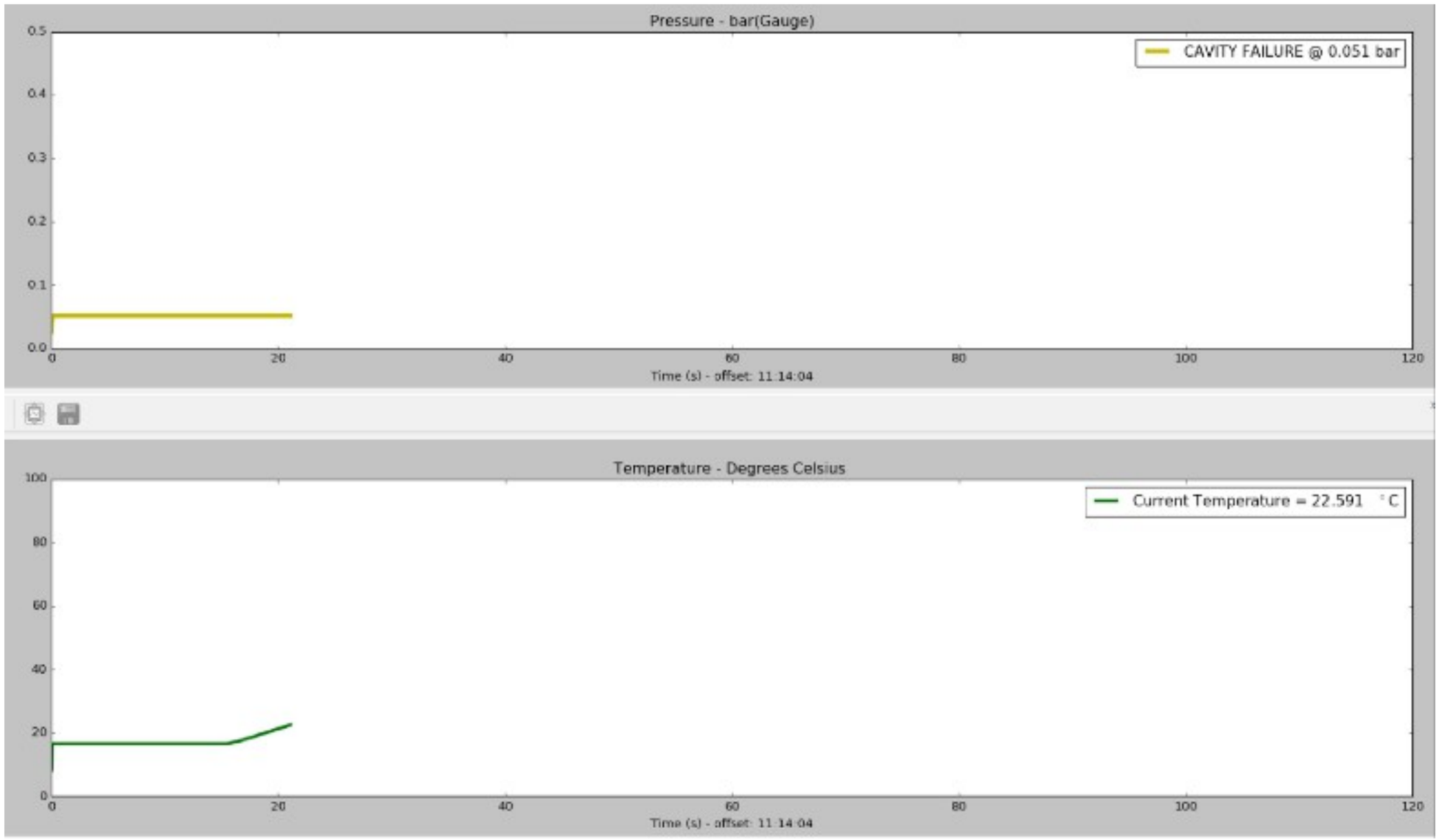


Our Solution: Fugitive Emissions Detector Gearbox

Leak Detected

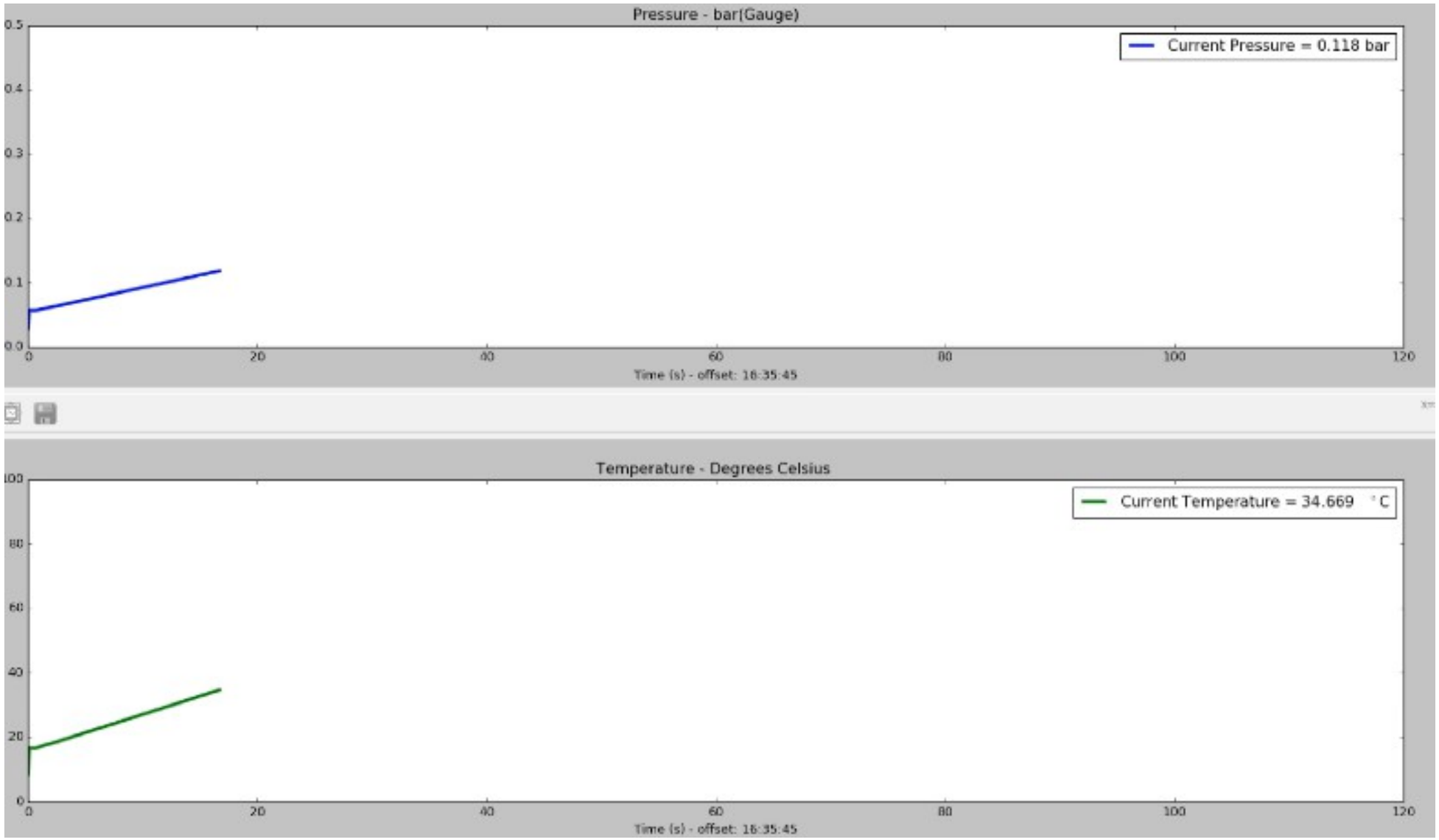
Our Solution: Fugitive Emissions Detector Gearbox

Cavity Failure



Our Solution: Fugitive Emissions Detector Gearbox

Temperature



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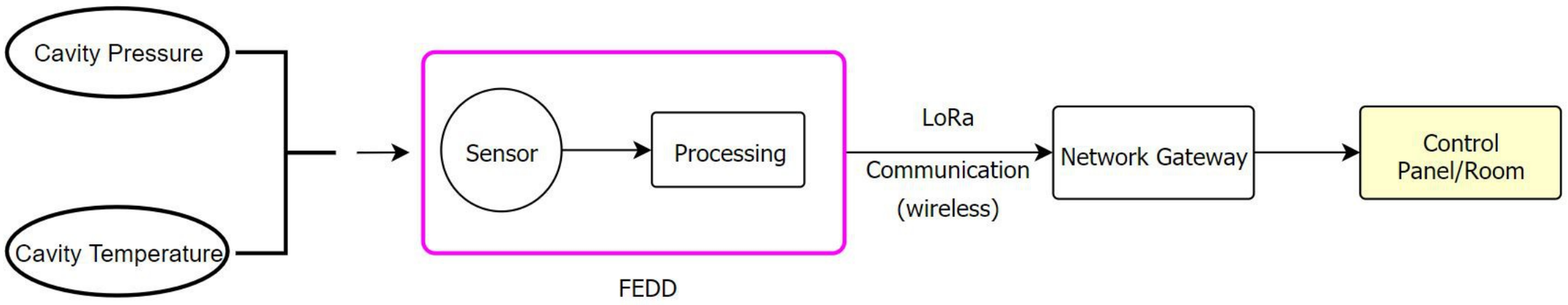

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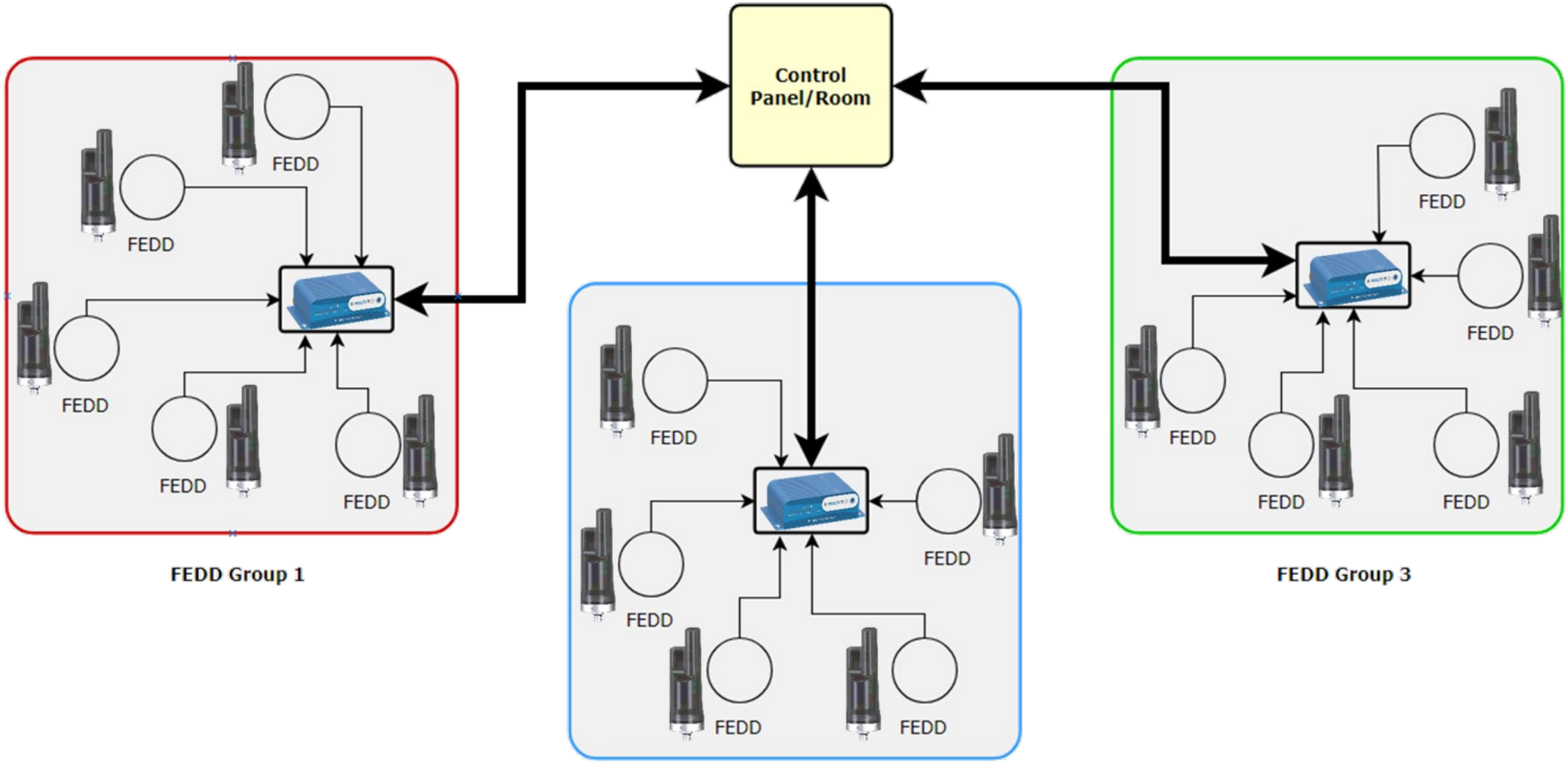
Control Panel/Room
FEDD
FEDD
FEDD

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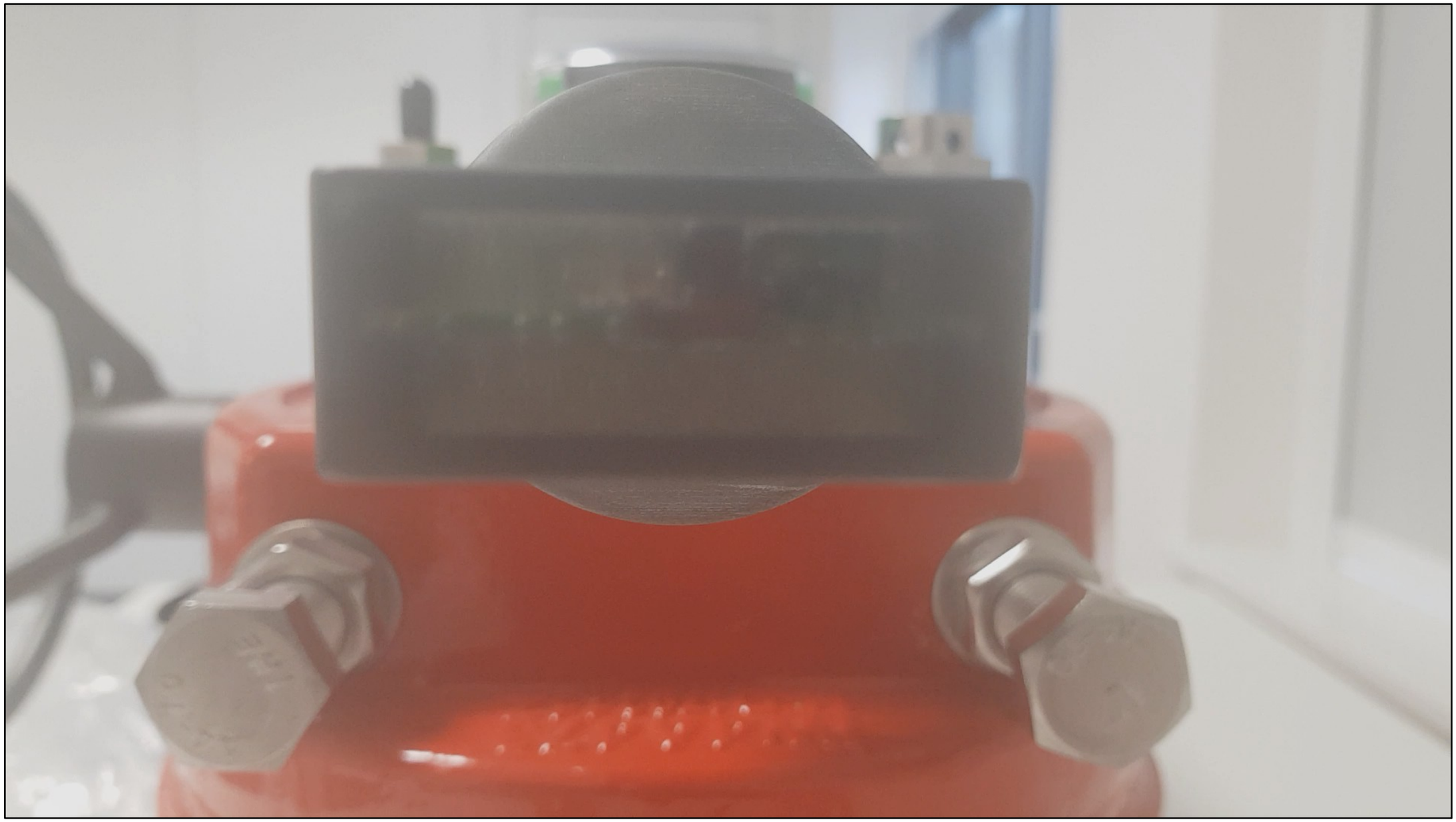


Our Solution: Fugitive Emissions Detector Gearbox

Device ID

Battery Life

Reporting Mode

	Network Name	Network Password	Join Offset	Rx Offset	Change	Upload Your Registration file here:	Upload Your Connectivity file here:
☒					GO	Browse... Submit	Browse... Submit

EDIT	TAG	EUI	Data	RSSI	Data Rate	Updated	Status	Mode	Alarm	Count
edit	T27	0080000004042f4	Temperature[C]=23.42, Pressure[mBar]=990.0, Battery Level[mV]=3637, Battery Life[%]=[illegible], RSSI[dBm]=0, Avg. Current[uA]=15, Leak Grade=0.0000, Reset Type=5, FW Info =11000000,	-81	SF12BW125	12:18:23 24/01/2018	0xc7004000	NR	A5	1
edit	T25	0080000004004301	Temperature[C]=20.80, Pressure[mBar]=1017.2, Battery Level[mV]=3644, Battery Life[%]=97.97, RSSI[dBm]=0, Avg. Current[uA]=17, Leak Grade=0.0000, Reset Type=5, FW Info =13000000,	-40	SF12BW125	13:09:00:29/01/2018	0xc7004000	NR	A5	1
edit	T13	008000000400430e	Temperature[C]=20.83, Pressure[mBar]=1018.0, Battery Level[mV]=3654, Battery Life[%]=97.98, RSSI[dBm]=0, Avg. Current[uA]=22, Leak Grade=0.0000, Reset Type=5, FW Info =13000000,	-35	SF12BW125	14:35:50 29/01/2018	0xc7004008	NR	A5	1
edit	T21	0080000004004302	Temperature[C]=21.09, Pressure[mBar]=1017.0, Battery Level[mV]=3645, Battery Life[%]=98.28, RSSI[dBm]=0, Avg. Current[uA]=22, Leak Grade=0.0000, Reset Type=5, FW Info =13000000,	-38	SF12BW125	14:37:24 29/01/2018	0xc7004008	NR	A5	1
edit	T9	0080000004004307	Temperature[C]=12.09, Pressure[mBar]=1236.0, Battery Level[mV]=3513, Battery Life[%]=99.52, RSSI[dBm]=-72, Avg. Current[uA]=160, Leak Grade=0.2513, FW Info =13aa0001,	-100	50000	14:53:01:30/01/2018	0xb1a00008	NR	A2	33
edit	T15	008000000400430d	Temperature[C]=20.66, Pressure[mBar]=1016.0, Battery Level[mV]=3030, Battery Life[%]=99.97, RSSI[dBm]=0, Avg. Current[uA]=7, Leak Grade=-0.0025, Reset Type=5, FW Info =15000000,	-50	SF12BW125	15:45:07:07/02/2018	0xc7000100	NR	A5	1
edit	T29	00800000040042f0	Temperature[C]=20.23, Pressure[mBar]=1009.0, Battery Level[mV]=3672, Battery Life[%]=99.99, RSSI[dBm]=0, Avg. Current[uA]=10, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-27	SF12BW125	08:20:44 08/02/2018	0xc7000000	NR	A5	1
edit	T24	0080000004004300	Temperature[C]=20.12, Pressure[mBar]=1007.0, Battery Level[mV]=3668, Battery Life[%]=99.99, RSSI[dBm]=0, Avg. Current[uA]=17, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-38	SF12BW125	08:30:02:08/02/2018	0xc7000000	NR	A5	1
edit	T26	0080000004004304	Temperature[C]=20.14, Pressure[mBar]=1005.0, Battery Level[mV]=3673, Battery Life[%]=99.99, RSSI[dBm]=0, Avg. Current[uA]=8, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-27	SF12BW125	08:43:11 08/02/2018	0xc7000000	NR	A5	1
edit	T5	00800000040042f3	Temperature[C]=20.28, Pressure[mBar]=1008.0, Battery Level[mV]=3642, Battery Life[%]=99.99, RSSI[dBm]=0, Avg. Current[uA]=10, Leak Grade=-0.0046, Reset Type=5, FW Info =15000000,	-36	SF12BW125	08:51:48 08/02/2018	0xc7000000	NR	A5	1
edit	T20	008000000400430c	Temperature[C]=19.88, Pressure[mBar]=1005.0, Battery Level[mV]=3639, Battery Life[%]=100.00, RSSI[dBm]=0, Avg. Current[uA]=16, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-35	SF12BW125	09:33:22 08/02/2018	0xc7000000	NR	A5	1
edit	T16	0080000004004309	Temperature[C]=19.91, Pressure[mBar]=1006.0, Battery Level[mV]=3629, Battery Life[%]=100.00, RSSI[dBm]=0, Avg. Current[uA]=200, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-39	SF12BW125	09:39:10 08/02/2018	0xc7000008	NR	A5	1
edit	T32	0080000004042f7	Temperature[C]=23.75, Pressure[mBar]=988.0, Battery Level[mV]=3664, Battery Life[%]=99.99, RSSI[dBm]=0, Avg. Current[uA]=2, Leak Grade=0.0000, Reset Type=5, FW Info =15000000,	-32	SF12BW125	14:03:29 12/03/2018	0xc7000000	NR	A5	1
edit	T11	0080000004042f1	Temperature[C]=21.43, Pressure[mBar]=1002.0, Battery Level[mV]=3457, Battery Life[%]=77.54, RSSI[dBm]=0, Avg. Current[uA]=1886, Leak Grade=0.0063, Reset Type=5, FW Info =17000000,	-40	SF12BW125	13:51:24 09/04/2018	0x81004008	NR	A0	1
edit	T8	00800000040042fc	Temperature[C]=20.58, Pressure[mBar]=1007.0, Battery Level[mV]=3587, Battery Life[%]=95.63, RSSI[dBm]=-99, Avg. Current[uA]=65, Leak Grade=-0.0007, FW Info =17aa0002,	-106	50000	14:37:30 16/04/2018	0x91200008	NR	A3	243
edit	T23	00800000040042fe	Temperature[C]=22.24, Pressure[mBar]=1007.0, Battery Level[mV]=3530, Battery Life[%]=88.99, RSSI[dBm]=-92, Avg. Current[uA]=161, Leak Grade=-0.0193, FW Info =17aa0001,	-105	50000	17:48:08:16/04/2018	0xb1200028	NR	A3	68
edit	T7	0080000004001ec0	Temperature[C]=21.97, Pressure[mBar]=1009.0, Battery Level[mV]=3596, Battery Life[%]=96.39, RSSI[dBm]=-100, Avg. Current[uA]=74, Leak Grade=0.0159, FW Info =17aa0002,	-98	50000	14:34:36 17/04/2018	0x91200008	NR	A4	180
edit	T12	008000000400430b	Temperature[C]=21.82, Pressure[mBar]=1009.0, Battery Level[mV]=3528, Battery Life[%]=93.88, RSSI[dBm]=-95, Avg. Current[uA]=162, Leak Grade=0.0000, FW Info =17bb0001,	-97	50000	02:01:29 19/04/2018	0xe6000038	NR	A5	146
edit	T10	0080000004004303	Temperature[C]=21.42, Pressure[mBar]=1015.0, Battery Level[mV]=3660, Battery Life[%]=96.77, RSSI[dBm]=-99, Avg. Current[uA]=4, Leak Grade=0.0097, FW Info =17bb0001,	-97	50000	02:05:25 19/04/2018	0x00000010	NR	A0	26
edit	T31	00800000040042f2	Temperature[C]=22.53, Pressure[mBar]=1018.0, Battery Level[mV]=3601, Battery Life[%]=94.78, RSSI[dBm]=-96, Avg. Current[uA]=75, Leak Grade=0.0063, FW Info =17aa0003,	-101	50000	03:21:43 19/04/2018	0x90200008	NR	A4	161

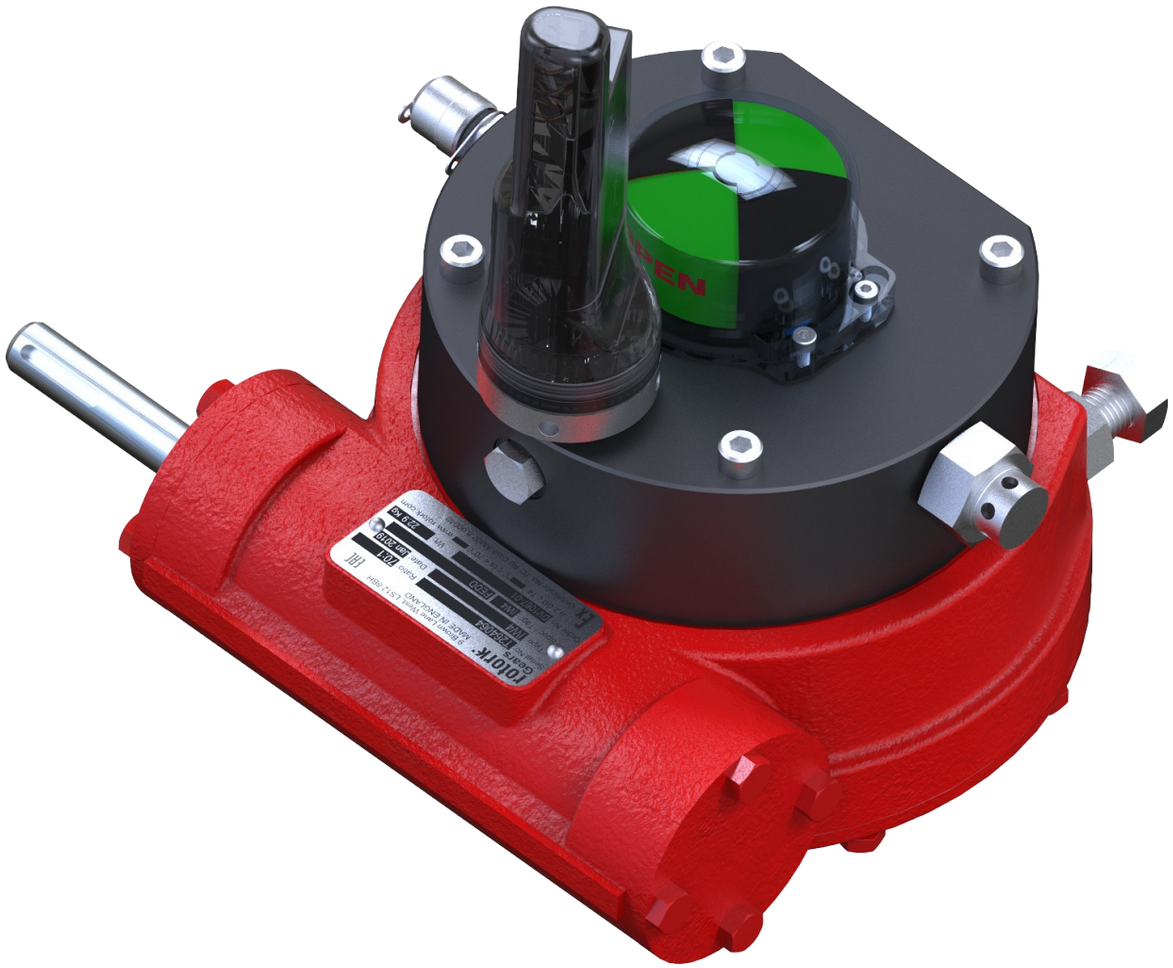
Equipment Tag

Current cavity Temperature & Pressure

Time stamp

Alarms

Summary



SUMMARY OF FEDG ADVANTAGES:

- Contains fugitive emissions
- Detects fugitive emissions
- Monitors fugitive emissions
- Alerts operators to fugitive emissions
- Minimises need for preventative maintenance

Thank you!

Do you have questions?

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