



# Meter, Valve & Control

PROCESS MEASUREMENT AND CONTROL SOLUTIONS



## Product Portfolio

Gas Utility Edition

2023



# Contents

Our Team .....3

Product Application Guide ..... 4-5

Measurement-Itron .....6

Measurement-Romet .....7

Measurement-Dresser.....8

Measurement-Sick..... 8-9

Pressure Control-Roots..... 10-11

Pressure Control-VRG ..... 12-13

Gas Filtration-Filter Fab .....14

Gas Filtration-IMAC .....15

Gas Electronics-Eagle..... 16-17

Gas Detection-Gazomat ..... 18-19

Lone Worker Safety –Blackline Safety.....20

Field Proving-M3 .....21

Fabrication-Big Elk ..... 22-23

Renewable Gas/Hydrogen-Thyson Technology ..... 24-25

Gas Accessories-IMAC .....26

Gas Accessories and Meter Repair-IMAC.....27

Cathodic Protection-CPP/Eagle .....28

2023 Calendar Of Events .....29





# Our Team



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Onsite Greeter



Maybel  
Inventory Watch

# Product Application Guide

## Manufacturer

## Product/Service

## Product Photo



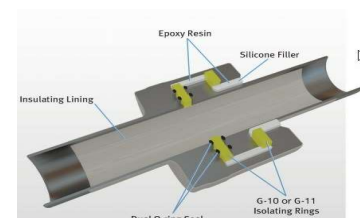
- ◆ Station Fabrication
- ◆ Pig Launchers/Receivers
- ◆ Mainline Valves
- ◆ Measurement Skids
- ◆ Control Valve Skids



- ◆ Lone Worker Safety Monitors
- ◆ Gas Detection
- ◆ 24/7 Monitoring



- ◆ Alfa Monolithic Isolation Joints
- ◆ Barlow Flange Isolation Joints
- ◆ TMK Surge Arrestors
- ◆ Dielectric Unions



- ◆ Electronic Volume Correctors
- ◆ Electronic Pressure Monitors
- ◆ RTU



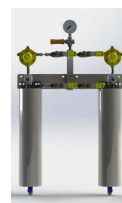
- ◆ Dry Particulate Filters
- ◆ Coalescing Filters



- ◆ Remote Methane Detection
- ◆ Mobile Methane Detection
- ◆ Fixed Methane Detection



- ◆ Pilot Filtration Systems
- ◆ Gas Meter Pulsers
- ◆ Gas Meter Repair





# Product Application Guide

## Manufacturer



## Product/Service

- ◆ 250-Intelis Ultrasonic Meters
- ◆ 400A-1000A Diaphragm Meters
- ◆ Gas Regulators
- ◆ AMR/AMI
- ◆ Mobile Master Meter
- ◆ 4-12" USM ready
- ◆ CEESI certified

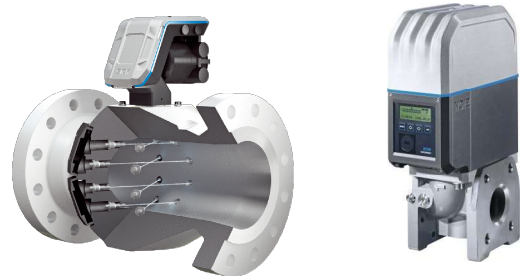
## Product Photo



- ◆ 8C-56M Rotary Meters
- ◆ Adem Volume Correctors
- ◆ BrightLync Advanced Communication Platform



- ◆ Ultrasonic Meters
- ◆ FS500 USM
- ◆ FS600-XT USM
- ◆ FS600-DRU



THYSON  
TECHNOLOGY

- ◆ Biomethane Injection Skids
- ◆ Hydrogen Blending/Injection Skids
- ◆ Complete Design and Fabrication
- ◆ System Startup and Remote Monitoring



- ◆ Control Valves
- ◆ Valve Pilot Controllers
- ◆ Valve Positioners
- ◆ Control Valve Accessories
- ◆ System Startup and Commissioning



# Measurement - Itron

## Ultrasonic Meters



Intelis 250

- Solid State Design
- Includes Itron Endpoint
- 0.5% Accuracy
- Internal Shutoff Valve
- High Flow Alarm
- High Temp Alarm
- Theft Alarm
- Small/Lightweight 4.5#



## Diaphragm Meters



400A

400 CFH @ 1/2"wc  
10 or 25 PSIG Case Rating



675A

790 CFH @ 1/2"wc  
25 PSIG Case Rating



800A

890 CFH @ 1/2"wc  
25 PSIG Case Rating



1000A

1040 CFH @ 1/2"wc  
25 PSIG Case Rating

## AMR/AMI Systems



### Endpoints

- Gas
- Water
- Electric
- Open Way Riva 500G
- Leak Detection
- Smart IoT



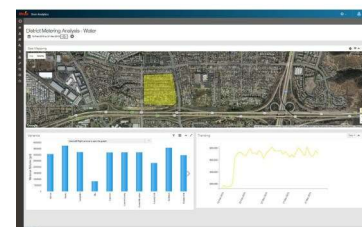
### Mobile Collection

- Itron Mobile Radio (IMR2) and IMR-FT
- MC4 Mobile Family



### Fixed Network

- Endpoints
- Repeaters
- Collectors
- Web Servers



### Software

- Temetra and Temetra Mobile
- Field Collection Systems (FCS) and Itron Mobile App (IMA)
- Field Tools
- Field Deployment Manager
- Network Software (NAA)





RMT Series Rotary Meters



RM Series Rotary Meters



AdEM-S/T(Q)/PTZ Modules



Diaphragm Meter  
Replacement Kits



AdEM Click



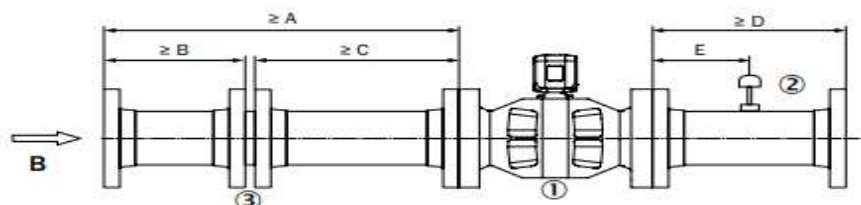
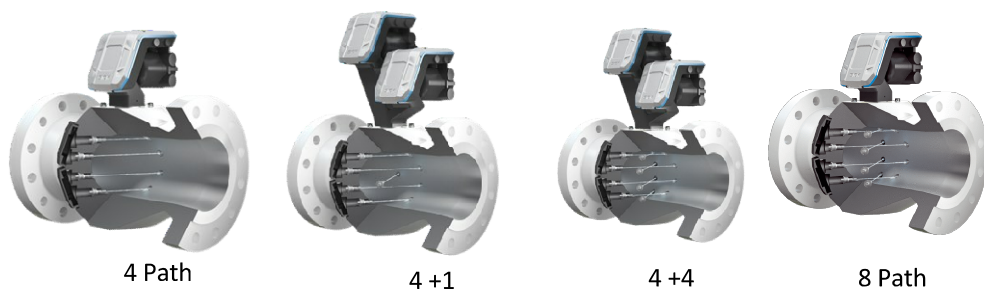
BrightLync Advanced  
Communications Platform

RMT Meter Data

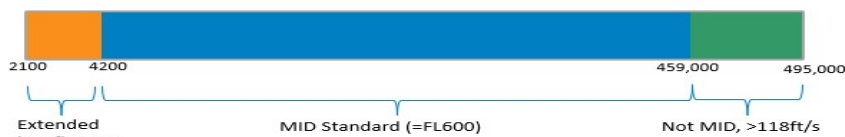
Parameter	Units	RMT600	RMT1000	RMT1500	RMT2000	RMT3000	RMT5000	RMT5000	RMT7000	RMT11000
Pipe Size	in.	2	2	2	2	2	2	3	3	4
MAOP	psig	175	175	175	175	175	175	175	175	175
Flow Capacity	acfh	600	1000	1,500	2,000	3,000	5,000	5,000	7,000	11,000
Rangeability @1%		1:25	1:35	1:80	1:100	1:85	1:200	1:150	1:85	1:140
Flg/Flg Dim.	in.	6.75	6.75	6.75	6.75	6.75	6.75	6.75	9.50	9.50
Avg Start Rate	cfh	0.48	0.48	0.52	0.42	0.44	1.2	0.42	1.30	1.37
Avg Stop Rate	cfh	0.38	0.38	0.41	0.34	0.35	0.34	0.34	0.80	0.82
Diff. 100% Flow	in w.c.	0.22	0.49	0.59	0.47	0.60	0.72	0.57	0.93	1.05
Weight	lbs.	17-27	17-27	18-28	20-30	24-34	33-43	33-43	42-48	54-60

## FLAWSIC600-XT

**SICK**  
Sensor Intelligence.



Number of measuring paths	AGA Report 9, 3 <sup>rd</sup> Edition, July 2017	A	Number of measuring paths	AGA Report 9, 3 <sup>rd</sup> Edition, July 2017	A	B	C	D	E
4	"Metering package performance" acc. § 6.3	20 DN	4	"Metering package performance" acc. § 6.3	10 DN	5 DN	5 DN	5 DN	2.5 DN
8	"Metering package performance" acc. § 6.3	5 DN	8	"Metering package performance" acc. § 6.3	5 DN	2 DN	3 DN	5 DN	2.5 DN



### FS600 XT Capacity Data (MACFH)

Size	ExtMin	Min	Max	ExtMax
3	.18	.28	23	35
4	.29	.46	35	56
6	.57	.71	88	106
8	.71	1.13	141	159
10	.88	1.80	230	247
12	1.20	2.30	276	283
14	1.60	2.80	353	354
16	2.10	4.20	459	495
18	3.50	4.60	565	602
20	4.60	7.10	706	708
24	6.40	11.30	989	1133
36	15.9	35.3	1801	2337
48	26.6	56.5	2825	3541

### Features and Benefits

- ◆ ASNI 150/300/600/900
- ◆ 3" through 56" diameters
- ◆ Same footprint as 600 (Classic)
- ◆ AGA-7 turbine meter drop in solution
- ◆ Sick sensor reliability
- ◆ Extended low flow
- ◆ 12 dB noise reduction over 600 (Classic)
- ◆ I-diagnostics provides simple troubleshooting
- ◆ Integrated cross beam provides better diagnostics
- ◆ FLOWgate Software
- ◆ Accurate with 0.5% dry calibration
- ◆ 0.1-0.2% accurate with flow lab calibration
- ◆ PowerIn technology provides battery backup
- ◆ Automatic Reynolds and geometry correction function

## FLAWSIC600 DRU/ DRU-S

- ◆ DRU 1% accurate without lab calibration. DRU S 2% accurate without flow calibration
- ◆ DRU available in 3, 4 and 6" sizes. DRU S available in 2, 3 and 4" size.
- ◆ All meters are ANSI 600
- ◆ Both DRU and DRU S are able to handle wet gas applications



### DRU Capacity (MACFH)

Size	Min	Max
3	.49	24.8
4	.86	35
6	1.95	75

### DRU S Dimensions

Size	A	B	C
2S	9.54"	40"	10"

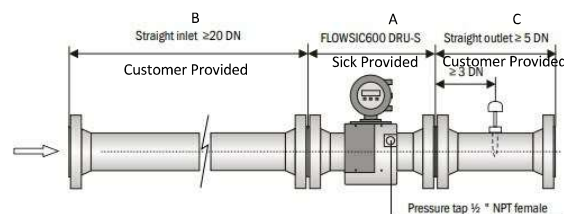
### DRU Dimensions

Size	A	B	C
3	40.94"	30"	15"
4	51.18"	40"	20"
6	76.77"	60"	30"

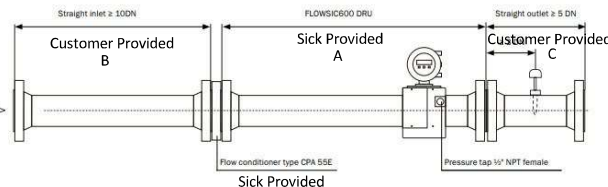
### DRU S Capacity (MACFH)

Size	Min	Max
2	.14	14

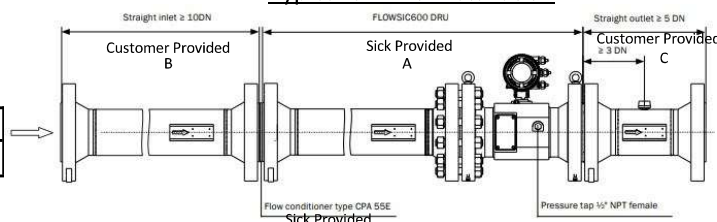
### Typical 2" DRU S Installation



### Typical 3" and 4" DRU and DRU Installation



### Typical 6" DRU Installation





## FLWSIC500



Meter size: 50 mm (2")



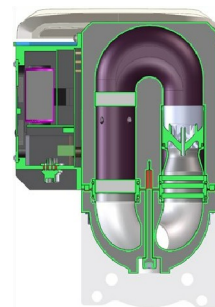
Meter size: 80 mm (3")



Meter size: 100 mm (4")



Meter size: 150 mm (6")



### FS500 Capacity Data (MSCFH)

PSIG	5.5M	14M	23M	35M
0.25	5.6	14	23	35
5	7.38	18.44	30.29	46.10
10	9.28	23.19	38.10	57.98
25	14.98	37.45	61.52	93.62
50	24.48	61.21	100.56	153.02
100	43.49	108.73	178.63	271.83
150	62.50	156.25	256.70	390.63
200	81.51	203.77	334.77	509.44
250	100.52	251.30	412.84	628.24

### Features and Benefits

- ◆ Latest ultrasonic technology
- ◆ No moving parts/Little to no maintenance
- ◆ Fail open continuous gas supply
- ◆ 0.5% accuracy
- ◆ Low flow accuracy
- ◆ No accuracy drift over time
- ◆ No overspinning damage
- ◆ Self Diagnostics/Warnings

### FS500 Meter Data

Parameter	Units	FS500-5.5M	FS500-14M	FS500-14M	FS500-23M	FS500-23M	FS500-35M
Pipe Size	in.	2	3	3	4	4	6
Flg to Flg	in.	6.75	6.75	9.5	9.5	11.81	17.75
MAOP	psig	285	285	285	285	285	285
Max Capacity	acfh	5650	14,126	14,126	22,956	22,956	35,315
0.5% Accuracy	acfh	56-max	141-max	141-max	230-max	230-max	353-max
1% accuracy	acfh	35-56	88-141	88-141	141-230	141-230	141-353
1% Rangeability		160:1	160:1	160:1	160:1	160:1	250:1
Weight	lbs.	23.4	40.3	45.2	60.0	64.8	77.2

- ◆ Longer calibration interval
- ◆ Replaceable cartridge design
- ◆ Drop in rotary replacement
- ◆ Drop in turbine replacement with short spool
- ◆ Straight inlet and outlet piping is not required
- ◆ Battery or line powered
- ◆ Corrected or Uncorrected volume
- ◆ ANSI 150 only

## FLWSIC550




### Features and Benefits

- ◆ 2-6" Meter Sizes
- ◆ ANSI 300/600
- ◆ Flg to Flg—3D
- ◆ 3D upstream
- ◆ 2D downstream
- ◆ Outputs—2xRS485, 2xPulse, 1xStatus
- ◆ Power—5yr battery or line power
- ◆ Class I/Div1 and Class 1/Div2
- ◆ Optional integrated volume correction
- ◆ Service—wired USB or Blue-tooth

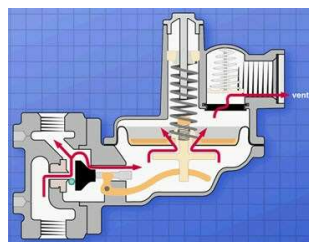


# Pressure Control – Roots Regulators

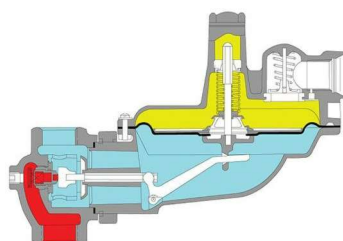


	Model	Model Versions	Outlet Pressure Range	Valve Body Options (inches)	Maximum Inlet Pressure	Maximum Capacity (natural gas - SCFH)
<b>Service and Industrial Appliance Regulators</b>						
	B42	R, N	5-inch w.c. to 5 PSIG	1/2, 3/4, 1, 1-1/4 NPT	125 PSIG	2,500
	B57	R, N, HP	4-inch w.c. to 2.5 PSIG	1/2, 3/4, 1, 1-1/4 Inlet 1/2, 3/4, 1, 1-1/4 Outlet	125 PSIG	2,500
	B58	R, N, HP	4-inch w.c. to 2.5 PSIG	1/2, 3/4, 1, 1-1/4 Inlet 1/2, 3/4, 1, 1-1/4 Outlet (NPT)	125 PSIG	2,500
	B31	R, N, IMN, IMR, IMRV, M	4-inch w.c. to 2 PSIG	3/4, 1, 1-1/4 NPT	125 PSIG	3,000
	B531	R, N, IMN, IMR, IMRV	5-inch w.c. to 2 PSIG	3/4, 1, 1-1/4, Inlet; 3/4, 1-1/4, 1-1/2, 1-3/4, 2 Outlet (NPT)	125 PSIG	5,000
	B34S	R, N	4-inch w.c. to 2 PSIG	1-1/4, 1-1/2, 2 NPT 2, 3 FL	125 PSIG	7,500
	B34	R, N, M, D, IMN, IMR, IMRV	5-inch w.c. to 5 PSIG	1-1/4, 1-1/2, 2 NPT 2, 3 FL	125 PSIG	15,000
	B38	R, N, M, D, IMN, IMR, IMRV	5-inch w.c. to 5 PSIG	2 x 2 NPT, 2 x 2 FL 2 x 3 FL, 2 x 4 FL	125 PSIG	20,000
	B838	R, N, M, D, IMN, IMR, IMRV	5-inch w.c. to 5 PSIG	2 x 2 NPT, 2 x 2 FL, 2 x 3 FL, 2 x 4 FL	125 PSIG	50,000
	RB1700	N, M	7-inch w.c. to 36 PSIG	1-1/2 NPT	230 PSIG	100,000
	RB4000	N, M	4-inch w.c. to 30 PSIG	2, 3 FL	275 PSIG	600,000

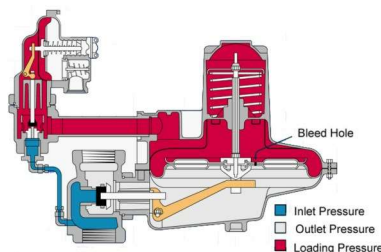
R = Relief, N = No Relief, M = Monitor, IM –see page 11



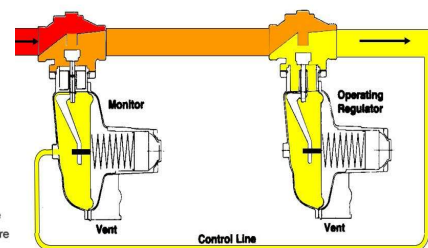
(R) Relief Style Regulator



Service Regulator Cutaway



Pilot Operated Cutaway








Worker-Monitor



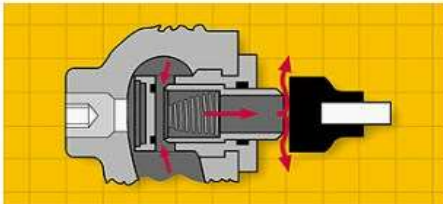
# Pressure Control – Roots Regulators

## Constant-Loaded (Fixed Factor Billing) Regulators

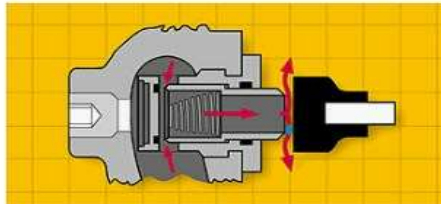
	CL31	Pilots: R,N Options: IM, IMV	1 to 20 PSIG	3/4, 1, 1-1/4 NPT	125 PSIG	4,000
	CL231	Pilots: R, N	1 to 20 PSIG	1-1/4, 1-1/2, 2 NPT 2, 3 FL	125 PSIG	7,500
	CL34	Pilots: 1, 2 Options: M, IM, D	5-inch w.c. to 60 PSIG	1-1/4, 1-1/2, 2 NPT 2, 3 FL	150 PSIG	40,000
	CL38	Pilots: 1, 2 Options: M, IM, IMV, D	5-inch w.c. to 30 PSIG	1-1/2, 2 NPT 2, 3 FL	150 PSIG	60,000
	CL838	Pilots: 1, 2 Options: M, IM, IMV, D	5-inch w.c. to 30 PSIG	2 x 2 NPT 2 x 3, 2 x 4 FL	150 PSIG	100,000

R = Relief, N = No Relief, M = Monitor, IM –see below

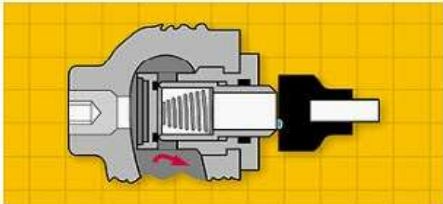
### Internal Monitor (IM) Principle of Operation



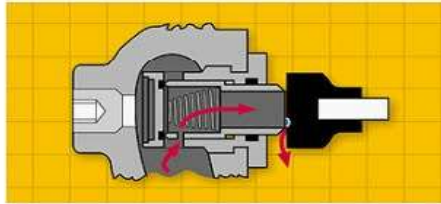
Standard regulator and upstream monitor orifice



Standard regulator orifice failed. Upstream monitor orifice control.



Standard regulator orifice failed - upstream monitor orifice in No Flow



V option. Vent small volume to atmosphere. Replaces tell-tale relief valve.

### Roots Gas Regulator Sizing Application

- Tool to allow for Roots Regulators selection based on application parameters and safety preferences
- <https://regulatorsizing.dresserngs.com/RegulatorSizing/disclaim.html>

*Sprague*  
1903

*Sprague*  
**TEXTRON**  
1960

**Schlumberger**  
1985

**ACTARIS**  
measuring systems  
2001

**Itron**  
2007

**ROOTS**  
REGULATORS  
2022

# Pressure Control – VRG Controls



The VRG Team



Zero Steady State Emissions

"We're Putting the Band Back Together"



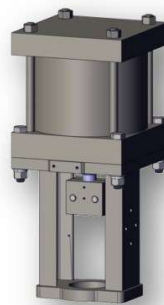
VRGCONTROLS



Valve Pilot Controllers (VPC)



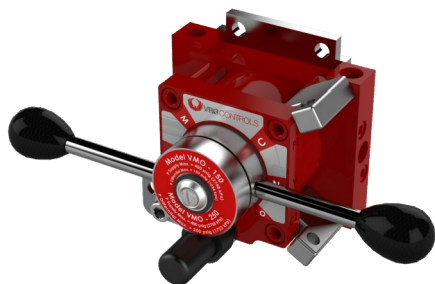
RCVC



Valve Actuators



Control Valves



Valve Manual Override (VMO)



No Vent Device



Volume Boosters



Ball Valve Assemblies



Control Panels

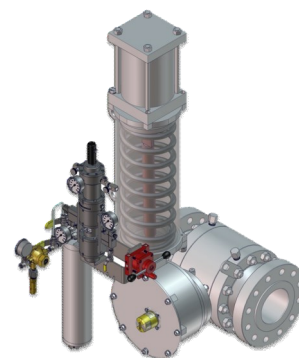


Electronic

Setpoint Control



Globe Valve Assemblies



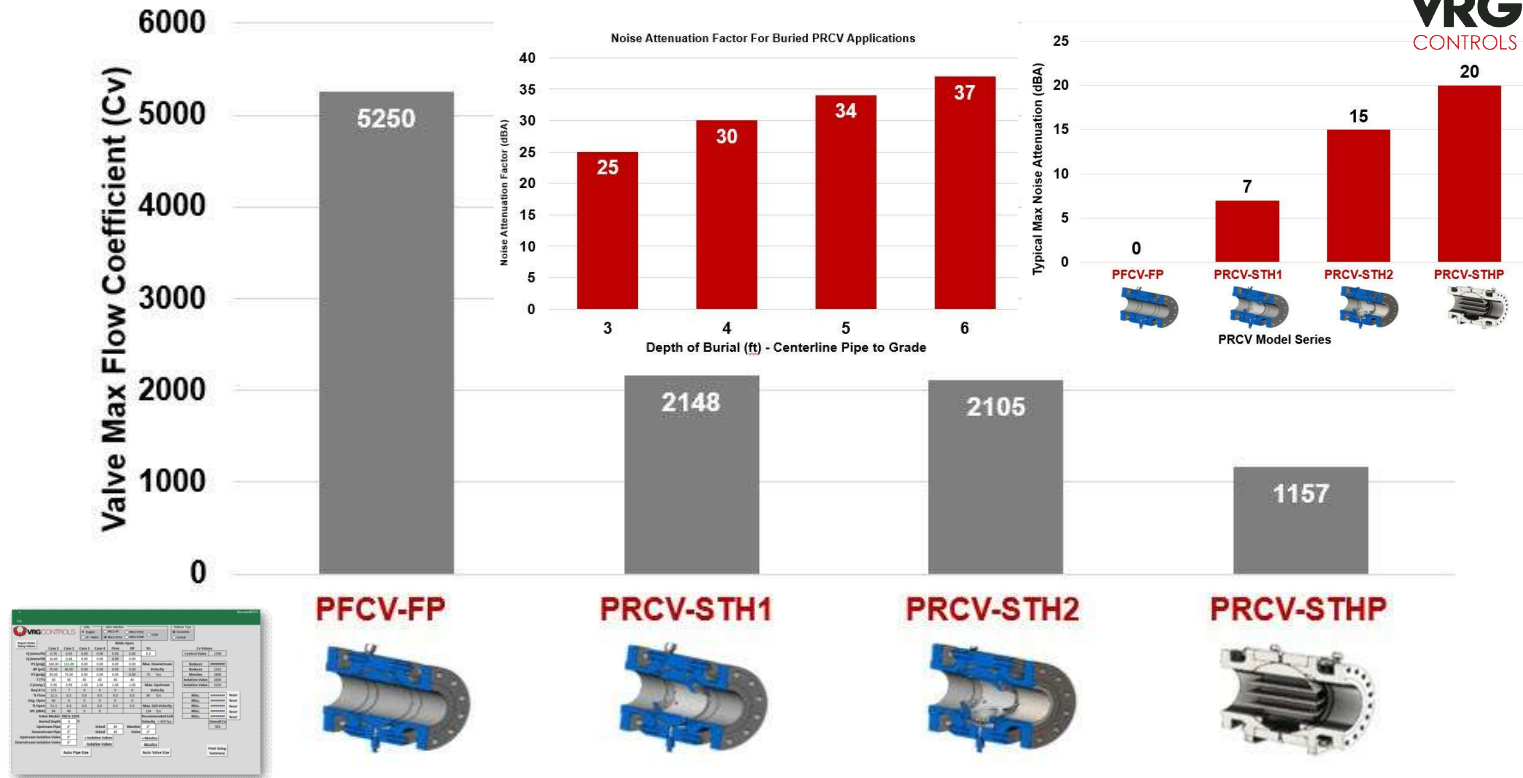
Spring Return



# Pressure Control – VRG Controls



## PRCV Pipeline Rotary Control Valve Flow Capacity Analysis (8 in PRCV Series Control Valve)


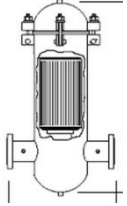

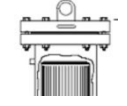



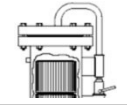


VRG Sizing and Noise Attenuation


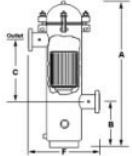

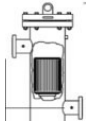

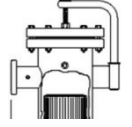




# Gas Filtration - Filter Fab

## Dry Particulate Filters

ITEM TYPE	MANUFACTURER	BASE MODEL NO	PIPE SIZE	PRESS CLASS	CONN TYPE	TOP STYLE	MICRON RATING	PICTURE
T STYLE 1		F1.5M-180	1.5"	180 PSIG OR ANSI 150 (285 PSIG)	FLG (STD) NPT WELD	QUICK OPEN (STD), BLIND FLG (BF), KNOCK-OFF (KO)	10 (STD) OR 5	
		F2M-180	2"					
		F1.5-180/285	1.5"					
		F2-180/285	2"					
		F3-180/285	3"					
		F4180/285	4"					
		F6-180/285	6"					
T-STYLE 2		F2-740/1480	2"	ANSI 300/600	FLG OR WELD	BF (STD) OR KO	10 (STD) OR 5	
		F3-740/1480	3"					
		F4-740/1480	4"					
T STYLE 3		F6-740/1480	6"	ANSI 150/300 600	FLG OR WELD	BF (STD) OR KO	10 (STD) OR 5	
		F8-740/1480	8"					
		F10-285/740/1480	10"					
		F12-285/740/1480	12"					
T STYLE 4		F10-1480	10"	ANSI 600	FLG OR WELD	BF	10 (STD) OR 5	
		F12-1480	12"					

## Coalescing Filters

ITEM TYPE	MANUFACTURER	BASE MODEL NO	PIPE SIZE	ANSI CLASS	CONN TYPE	TOP STYLE	MICRON RATING	PICTURE
C-SERIES STYLE 1		C2-180/285	2"	180 PSIG OR ANSI 150 (285 PSIG)	FLG (STD) NPT WELD	QUICK OPEN (STD), BF, KO	0.3	
		C3-180/285	3"					
		C4180/285	4"					
		C6-180/285	6"					
C-SERIES STYLE 2		C2-740/1480	2"	ANSI 150 300/600	FLG OR WELD	BF (STD) OR KO	0.3	
		C3-740/1480	3"					
		C4-740/1480	4"					
		C8-285	8"					
C-SERIES STYLE 3		C6-740/1480	6"	ANSI 150/300 600	FLG OR WELD	BF (STD) OR KO	0.3	
		C8-740/1480	8"					
		C10-285/740/1480	10"					
		C12-285/740/1480	12"					
C-SERIES STYLE 4		C10-1480	10"	ANSI 600	FLG OR WELD	BF	0.3	
		C12-1480	12"					

## How To Build a Part Number



<b>Inlet Line Size</b> - If inlet and outlet line size are the same then only show this number.	<b>Pressure Rating</b> - Show 180, 285, 740, 1480 (psi).	<b>Closure style</b> - Swing Head, Blind flange, Knock-Off	<b>Body Material</b> - Carbon Steel, 304 SS, 316 SS
Filter Coalescer	F 3/4 X - 285	RF - S - CS	
<b>Outlet Line Size</b> - Show only if different from inlet	<b>Special</b> - An "X" here alerts us to a special non-standard design	<b>Connection Type</b> - Male Pipe Thread, Female Pipe Thread, Raised Face flanges, Flat Face flanges, or W for butt weld	





# Gas Filtration - IMAC Systems

## Gasket Strainers



- ◆ 3/4-30"
- ◆ Class 150, 300, custom
- ◆ Ring or Full Faced
- ◆ 20-120 mesh

## 90 Degree Strainers (NPT)



**DIMENSIONS\***

	A	B
3/4"	2 1/4"	1 1/4"
1"	3"	1 1/2"
1 1/4"	3 1/2"	1 3/4"
1 1/2"	3 3/4"	1 7/8"
2"	4 1/2"	2 1/4"
3"	6 1/2"	3 1/4"
4"	7 1/2"	3 13/16"

- ◆ 3/4-4"
- ◆ 20-100 mesh
- ◆ Class 150
- ◆ Epoxy coated cast iron

## 90 Degree Strainers (FLG)



**DIMENSIONS\***

	A	B
1 1/2"	5"	4"
2"	5"	4 1/2"
3"	11"	5 1/2"
4"	13"	6 1/2"
6"	16"	8"

- ◆ 1.5-6"
- ◆ 20-100 mesh
- ◆ Class 125
- ◆ Iron body, steel BF

## I-Filter



MODEL NUMBER	DIMENSIONS (INCHES)				WEIGHT (POUNDS)	REPLACEMENT PARTS		
	INLET x OUTLET FNPT	LENGTH	MAX. DIAMETER			ELEMENT PART NO.	SEAL PART NO. (NUT)	SEAL PART NO. (ELEMENT)
I0750	3/4 x 3/4	6	2		2	701-P0024	701-P0025	701-P0026
I1000	1 x 1	9	2 1/2		4	701-P0003	701-P0005	701-P0006
I1250	1 1/4 x 1 1/4	10 3/4	3 1/2		9 1/2	701-P0016	701-P0018	701-P0019
I1500	1 1/2 x 1 1/2	10 3/4	3 1/2		9 1/2	701-P0016	701-P0018	701-P0019
I2000	2 x 2	11 7/8	4		14	701-P0011	701-P0012	701-P0013



Systems, Inc.

International Measurement and Control Systems

## Instrument Filter Dryers

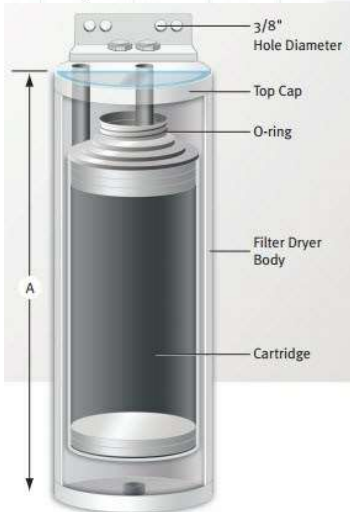
IMAC Systems manufactures Filter Dryers to provide maximum filtration and maximum drying for supply gas to control instruments including pilot regulators, catalytic heaters, and pneumatically controlled actuators. Imac is known for their high quality and large stock on hand for quick deliveries. Imac continues to look for ways to improve on this product line which has resulted in improved traceability, interchangeable elements with other manufacturers, longer cartridge life and superior sulfur removal to name a few.



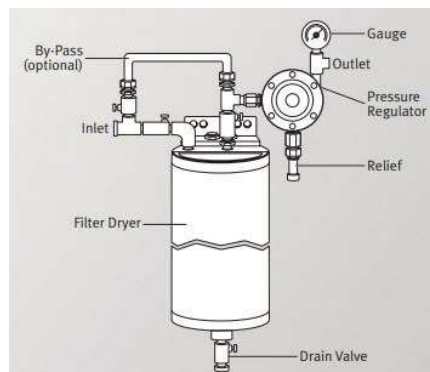
## Filter Dryer Dimensions

DRYER TYPE	HEIGHT (A)	DIAMETER (B)	HOLE SPAN (INSIDE)	HOLE SPAN (OUTSIDE)
FD-19	5 1/2"	3 1/2"	1.543"	3.145"
FD-4	12"	4 1/2"	2"	3"
FD-5	19"	4 1/2"	2"	3"

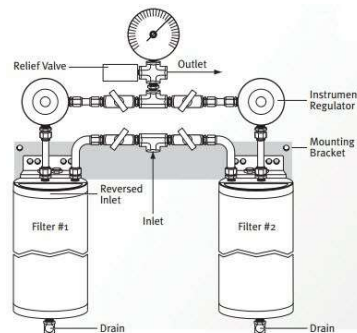
ITEM	DESCRIPTION	FD-19 PART NO.	FD-4 PART NO.	FD-5 PART NO.
1	Top Cap	719-19-8B	719-4-3	719-4-3
2	O-ring	719-233	719-241	719-241
3	Filter Dryer Body	719-19-3AA	719-4-1AA	719-5-1AA
4	Cartridge	719-19-19_	719-4-4_	719-5-5_
5	Mounting Bracket	n/a	719-4-5	719-4-5



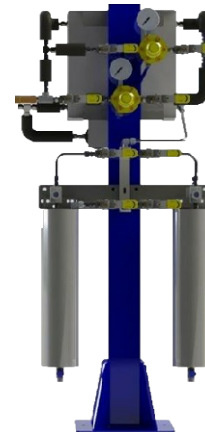
## Regulated Supply Gas System



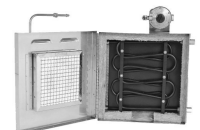
## Filter Dryer Switching Assembly



## Filter Dryer Systems



## Accessories





# Gas Electronics - Eagle

## Currently Available Platforms (Year Launched)

- ◆ **XARTU/1 (1999)**—The XA platform has been Eagles flagship product line since the year 1999 and is currently available as an Electronic Volume Corrector (EVC), Electronic Pressure Recorder or Collector (EPR or EPC), Electronic Flow Meter (EFM), Cathodic Protection Monitor (CPM), and Transfer Prover.
- ◆ **MPplus (2006)**—The MPplus was launched in 2006 as a simple low cost EVC and EPR typically used when remote connection via integral modem was not required.
- ◆ **E-Series (2016)**—Eagle recently launched the next generation of the XA called E-Series. The E-series includes the latest technology and provides faster processing speed, more storage, ethernet, Bluetooth and Modbus TCP protocols.
- ◆ **MPplus II (2020)**—The MPplus II was launched in late 2020 as the next generation of the MP-Plus and includes a low power processor for extended battery life. A low power modem can also be added when real time remote connectivity is required.



**EAGLE RESEARCH CORPORATION**



### EFC - Flow Corrector



- Complete AGA & API Compliance & Support
- Universal Meter Mounting Plate
- Uni & Bi-Directional Flow Accumulation
- Live Pressure & Temperature
- Multi-Meter Run Capable

### EPR - Pressure Recorder



- Circular Charting with Field Manager™
- Live Pressure & Temperature
- Multi Pressure Capable
- Battery, Solar, & UPS Options
- Small Footprint for Easy Locating

### RTU - Remote Terminal Unit



- Fully Programmable
- Access to Large Process Library & Pre-Configured Applications
- Support for Multiple Meter Runs & Control Schemes on One Platform
- Simple Start-up for Fast Return on Investment
- Cross Platform Compatible

### EFM - Flow Meter



- Integrated Multi-Variable Transmitter (Uni & Bi-Directional Flow Ready)
- Multi-Meter Run Capable
- Connectivity to GC's, Analyzers via Serial or Ethernet Connectivity
- Chart Replacement Versions Available

**EAGLE E-SERIES™**





## EAGLE MP<sub>plus</sub> II SERIES™



### MVC VOLUME CORRECTOR



#### (Standard) High-Accuracy Digital Pressure Transducer:

- Accuracy over -40°C to 85°C (-40°F to 185°F)  
(including linearity, hysteresis and repeatability)  
Pressure Measurement 0.1% of full scale  
Temperature Measurement ±0.5°F
- Long Term Stability  
Pressure Measurement ±0.05% of full scale/year

#### Available On-Board

- USB Device port
- (1) Serial port (RS232) for local communications or communication devices
- (1) Additional communications port for cellular modems or other communications devices
- (4) Pressure Inputs (high-accuracy (2) digital or (2) analog strain gauge)
- (1) RTD (Temperature Probe)
- (2) Form A / Form C pulse inputs
  - Software selectable high and low speed operation
- (4) Form A Pulse Outputs
  - Support for cut-wire alarm
- MPPT (Maximum Power Point Tracking) based solar charger supports up to 40W solar panels

- Ultra-Low-Power processor for extended battery life (Up to 10 years - life based on configuration)
- High-Accuracy digital pressure transducer(s)
- Optional Low-Power cellular modem for IoT connectivity
- Versatile IoT sockets for a future-proof design
- Fully programmable
- Simple start-up for fast Return on Investment (ROI)
- AMI/AMR compatibility with industry leading companies

#### Communication Options

- External USB
- RS232/RS485
- Sierra Wireless RV50X
- LTE Cellular
- M1 Cellular
- Bluetooth Interface
- Zigbee Digi XBee Radio
- Iridium Satellite Comm
- Analog Dial-Up Modem

#### Power Options

- Input power : 6 – 30 VDC
- Alkaline D Cell battery pack
- Lithium battery pack
- Rechargeable Lead Acid for Solar Applications

### MPM PRESSURE MONITOR



## SOFTWARE

### Talon Lite™

- Process Programming
- Master Load Creation & Management
- SCADA & Data Collection System Supporting both Serial & TCP/IP Ports, Incoming & Outgoing.
- Data Trending, Scheduler, & Auto Report
- Includes Circular Charting Capability
- Edit Form Text & Graphics Editor

#### Web Data Hosting

- Multi-User Security
- Subscription Service
- Graphing and Reporting
- Access Field Devices via Several Communications Options

### Talon SCE™

- Single Computer Edition
- SCADA & Data Collection System Supporting both Serial & TCP/IP Ports, Incoming & Outgoing
- Expandable Based on Polling Interval Needs
- Data Trending
- Report & Polling Scheduler
- Multi-Pen Historical Quick Trend Graphing
- Alarm Viewer
- Data Import Utility

### Field Manager™

- Field Device Tool & Wizards
- Auto Unit Identification
- Calibration Wizards
- Historical Data Collection
- Data Export Synchronization to Talon™

### Talon Enterprise™

- Client/Server Network Addition
- SCADA & Data Collection System Supporting both Serial & TCP/IP Ports, Incoming & Outgoing
- Expandable Based on Polling Interval Needs
- Multi-Level Passwords
- Advanced Alarming Support
- Multi-Screen Graphics
- System Management Tools
- Process Graphics for Top Level Maps, Charts or System Diagrams

### Field Manager™ (Cont.)

- Provides Printable Circular Chart Data from any of ERC's Flow Computers, Volume Correctors, & Pressure Recorders.

# Methane Detection - Gazomat



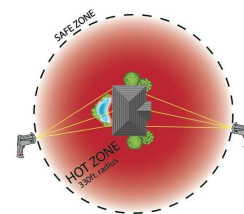
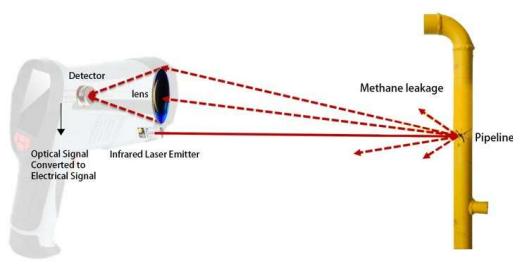
GAZOMAT is a specialist in the design, development, and manufacturing of high performance gas detectors utilized in natural gas distribution, transmission, wastewater treatment systems.

## GAZOSCAN™



The latest addition to the GAZOMAT™ product line, the next-generation GAZOSCAN™, is a handheld remote methane detector (RMD). This laser-based RMD is easy to use, highly sensitive and easily detects at 100 meters (330 feet) away, making it the ultimate tool for natural gas leak inspection of residential buildings and properties, gas leak inspection of natural gas pipelines, and methane leak inspection of gas containers. The GAZOSCAN™ device applies to any situation where operating close to the inspection zone is not possible.

- Excellent detection at 100 meters (330 feet)
- Detects through glass
- Fast response time, 0.1s
- 5 ppm sensitivity per meter
- Visual and audio alarms with configurable alarm threshold
- Easy to use
- Large LCD screen, 7.1 cm (2.8 in)
- Lightweight, 0.76kg (1.68bs)
- Certified Intrinsically Safe
- Bluetooth for easy data transfer
- Connection to GazoSurvey mobile app (optional)
- Investigate safely from beyond the U.S. Department of Transportation (DOT) and Pipeline and Hazardous Materials Safety Administration (PHMSA) Emergency Response Guidelines recommended safe distance from leakage of 100m (~330feet) found in ERG115



## INSPECTRA® LASER

The INSPECTRA® LASER is a natural gas leak portable analyzer with laser spectroscopy. This highly sensitive detector offers all the advantages of optical detection in a highly compact and portable device, giving you precise and reliable findings when detecting methane leaks.



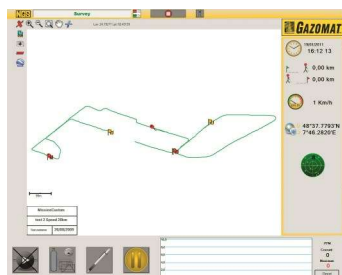
- Total selectivity to methane
- Extended measurement range, from 1ppm to 100% gas volume
- Methane high sensitivity, below 1 ppm
- ATEX certified, can be used safely indoors and outdoors as well as in hazardous areas
- User-friendly
- Minimal maintenance
- Traceability of surveys with the NGS survey software installed on a tablet and controlling the integrated GPS receiver
- Light weight, compact design for maximum working comfort (2,7 kg with batteries)
- Maximum operational autonomy: power supplied by rechargeable batteries





# Methane Detection - Gazomat

## VSR INSPECTRA®



The VSR INSPECTRA® is a natural gas distribution network survey vehicle with the exclusive laser spectroscopy analyzer and an integrated GPS system. It meets all productivity, reliability and traceability requirements of gas operators and its performance in leak detection is below 1 ppm sensitivity and ensures total methane selectivity.

- Methane high sensitivity, below 1 ppm
- Shortest response time in leak detection, with less than 1.5 seconds
- Integrated INSPECTRA® laser spectroscopy analyzer offers total selectivity to methane
- Survey speed up to 40 km/h
- Traceability of surveys with the NGS software installed on a tablet or laptop PC and controlling the integrated GPS receiver and the INSPECTRA® analyzer
- Real-time visualization of VSR and gas leaks on screen displayed map
- User-friendly interface with the NGS software
- Automatic recording of all survey data and report generation at the end of each mission
- GPS and mapping functions
- Multilingual system for worldwide use
- Compact-design equipment, easy to adapt to any type of vehicles

## NGMesh™

NGMesh is a methane emissions monitoring system which provides 24/7 monitoring, on-site surveys, report preparation and data storage. GAZPOD uses the INSPECTRA LASER technology to monitor emission activity 24/7 and provide on-site survey capability. The data collected from GAZPOD and on site personnel's mobile device via the NGMesh app is automatically transferred securely to the web software, eliminating the need for paper records manual data transcribing and transfer. Automated notifications and alerts are sent to designated personnel via app when leaks occur over a certain threshold.

- Built in cellular wireless network connection
- The NGMesh web app, opens on any browser, enables simple facility management, 24/7 leak monitoring, leak detection survey scheduling, and data review.
- Automated methane leak survey report generation for regulatory compliance
- Web software complies all data from the app and GAZPOD and stores for easy review.



# Lone Worker/Gas Safety - Blackline Safety



Blackline Safety is a globally connected safety technology leader. They design and engineer award-winning portfolio of gas detectors, area monitors, and lone worker devices in-house. The devices are coupled with their safety software, data analytics and reporting, risk mitigation and operational efficiency to develop dependable, cutting edge products. Blackline Safety also provides live, 24/7 monitoring for additional safety detection.

## G7 DEVICE WITH PLUG-AND-PLAY CARTRIDGES



G7 is a portable gas and fall detection device that can be used for safety monitoring of workers in the field. It sends gas, fall, and man-down detection alerts as well as an alert if a check-in is missed. It is completely customizable with an exclusive modular design to accommodate a variety of potentially harmful gasses.

- If a sensor fails or reaches the end of its serviceable life, swap out the cartridge for a new one in seconds
- Quickly convert a G7 device from a single-gas to a multi-gas monitor by changing the cartridge
- G7 sensors and pumps feature a lifetime warranty
- All cartridges are compatible with G7 Dock
- for straightforward bump tests and calibrations
- G7 devices communicate all test data to the Blackline Safety Network, eliminating the need to manually collect data from the field
- Automated mapping of the confined space entries, gas exposures, usage and alerts
- Includes manual SOS latch and silent alarm

## LONE WORKER MONITORING WITH BLACKLINE SAFETY NETWORK AND PORTAL



- Supports self-monitoring and Blackline-monitoring
- Employee address book
- Wirelessly configure devices
- Custom emergency response protocols

- Map employee and responder locations
- Assisted-GPS and location beacon technology
- Custom site and floor plans
- Evacuation management and mass



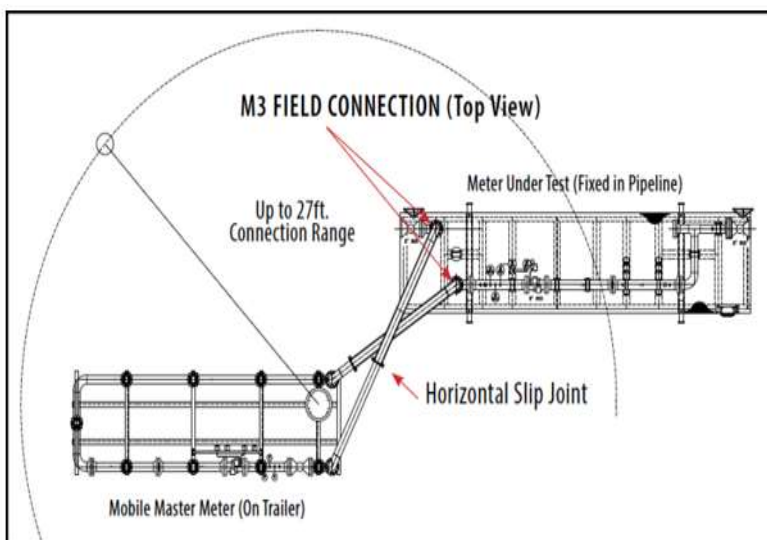


## Mobile Master Meter

[www.mobilemastermeter.com](http://www.mobilemastermeter.com)



The M3 “Mobile Master Meter” is exactly what it says. It is a patented, and portable verification system for high volume natural gas meters. M3 comes to you, reducing downtime. On site, M3 provides an instant snapshot of your meters accuracy. M3 utilizes the CEESI data acquisition and reporting system. The M3 master meter is lab calibrated at CEESI Iowa regularly to ensure high accuracy, high dependability, and low uncertainty. With empirical data, M3 provides a quantitative status of your meter’s accuracy, helping reduce your Lost and Unaccounted For gas, and empowering you with a tool to improve your systems balance.



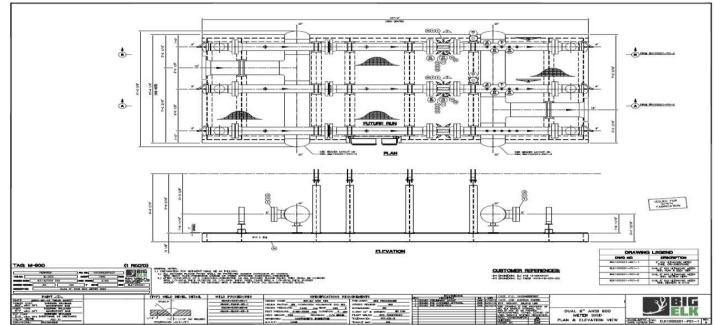




Big Elk Energy Systems, headquartered in Tulsa, Oklahoma, is a leading turkey manufacturer of custom fabrication skid production for the natural gas and renewable energy industries. From engineering to system design, piping layout, drafting and electrical and control system work, Big Elk pledges to find the ultimate and timely solution for client projects.

## System Design and Drafting

- ◆ Full design or simply design review
- ◆ Wide array of application types
- ◆ Recent project designs involve Biomethane, Hydrogen



## Manufacturing/Facility Layout

- ◆ 140,000 square feet of fabrication space
- ◆ 12 acres of storage
- ◆ 7 Sub Arc Machines
- ◆ 18,000+ square feet of blasting, painting, and curing
- ◆ Onsite X-ray, Hydro-testing, NDT, and Heat Treatment



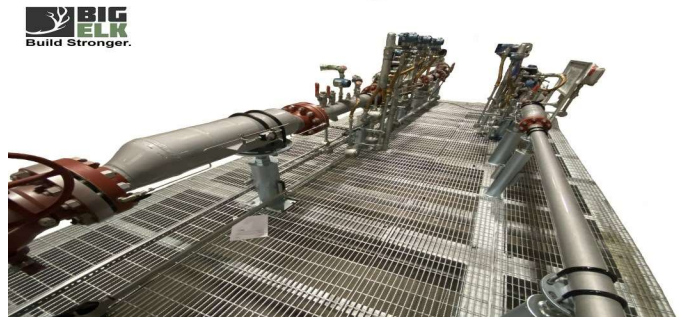
## Gas Chromatograph Building Stations

- ◆ Custom designed GC buildings to class 1 div 1 & 2
- ◆ Setup with specific analysis equipment for each client
- ◆ Insulated or non-insulated, heating or cooling options



## Meter Tubes/Big Elk Noise Attenuator

- ◆ Specializes in ultrasonic meter tube design and fab
- ◆ Developed a patented Big Elk Noise Attenuator eliminating the need for noise attenuating tees
- ◆ Noise Attenuator reduces skid sizes by up to 60%
- ◆ Patented Elliptical Deflector provides improved flow profile on inlet riser access tee.



# Fabrication - Big Elk

## Main Line Valve Settings

- ◆ Valve modification of large bore pipe up to 48"
- ◆ Blast and paint facilities designed with this in mind
- ◆ Entire paint and coating fully cured in indoor facilities prior to shipment



## Pig Launchers & Receivers

- ◆ Automated and standard launchers and receivers
- ◆ Offshore and onshore applications
- ◆ Sizes up to 54"x48" barrels, 36"x30" skid mounted
- ◆ Storage options available



Measurement Skids

(Ultrasonic, Coriolis, Orifice, Turbine, & biomethane)



Control Valve Skids



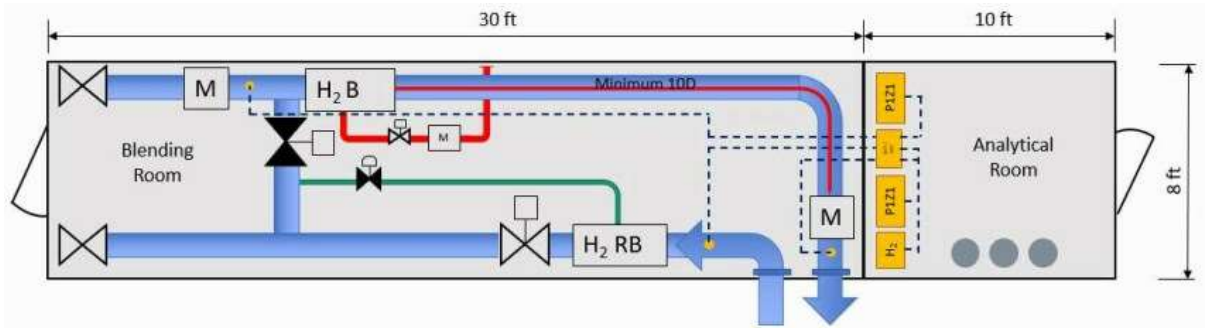
Big John Adjustable Pipe Support



Complete Stations



# Renewable Gas /Hydrogen- Thyson/Big Elk



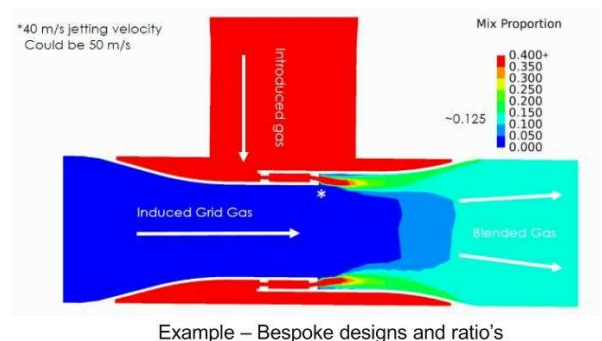
## Hydrogen Systems

Thyson is at the forefront of the hydrogen energy industry, which has a vital role to play in helping shift the global economy to a net zero model. Thyson provides measurement, instrumentation, analytical, and project-specific engineering solutions to deliver hydrogen fuel into gas networks, or for vehicle fuel systems. As a leader system engineer on both the HyDeploy at Keele University and HyDeploy 2 at Winalton, Thyson provides innovative support on projects in the UK and worldwide. Thyson and Big Elk out of Tulsa have partnered to provide biomethane and hydrogen injection systems in the US markets.



## Hydrogen Injection

Thyson designs and provides complete packaged hydrogen injection systems. Thyson has developed proprietary mixing spools and control systems to properly and safely inject customer desired hydrogen percentages into distribution and transmission systems. Thyson has partnered with Big Elk Energy Systems LLC out of Tulsa to fabricate hydrogen injection systems in the US Markets. Thyson, Big Elk and MV&C are able to provide complete design, fabrication start up and continued maintenance of all systems supplied in the North American markets.





# Renewable Gas/Hydrogen - Thyson/Big Elk



Gas Trans /  
Distribution



Biogas, Shale  
& Hydrogen



Oil, Gas  
& LNG

## Thyson Technology Capabilities

- Design—C&I, Electrical, Mechanical, Software
- Manufacturing and fabrication
- Project Management
- Site installation
- System integration
- Start up commissioning
- Service and Maintenance



## Project/Product Capabilities

- Hydrogen systems
- Biomethane systems
- Custody transfer measurement systems
- GC, analyzer kiosks and sampling systems
- Flow computer panels
- TTL P1Z1 Fast CV, Wobbe analyzers
- Odorant injection
- Proprietary mixing spools
- Telemetry and control rooms



# Gas Meter Accessories - IMAC Systems



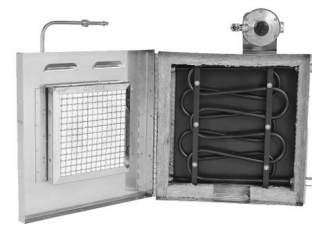
Pete's Plugs



Gauge  
Adapters



Filter Differential  
Pressure Gages



Catalytic  
Heaters



Regulator Screen  
Vents



Gas Meter Con-  
nection Sets



Rotary Meter  
Flange Kits



Bleed Line  
Deodorizers



Odorant Tank  
Vent Scrubbers



Turbine Meter  
Lubrication Systems



Model 1600 Oiler



Model 1650  
Waste Oil



Model X157  
Oiler



Moisture  
Indicator



Needle Valve Kits  
PTZ Piping Kits



Index Lock Boxes



Pipe Joint  
Tape



Universal Thread  
Adaptors



# Gas Meter Accessories - IMAC Systems



Pulsimatic



Domestic Meter



Add a Pulse



Honeywell  
Pulser



Switch  
Tester



Remote  
Totalizers



Pop Relief Valve



Rotary Meter Restrictor  
Orifice Plates



Threaded  
Thermowells



Vent Line Protectors  
(VLP)

## Gas Meter Repair and Calibration Service

- Gas Meter Rebuilding—Includes in test and out test, inspection and replacement of worn parts, complete cleaning and painting, pressure test, bolt removal, optional added accessories like pulse kits, pete's plugs, etc, 1 yr. guarantee with certificate of accuracy.
- Gas Meter Repair—Available for all commercial diaphragm meters and larger, all current and legacy style rotary meters, all current and legacy style turbine meters, transfer provers, and dry test meters.
- Instrument/Meter Calibration—Includes in test, inspection and cleaning, lubrication, out test, painting, calibration badge, NIST cert, limited 1 year warranty
- Repair and Proving Equipment—Rotary and CVM transfer provers, sonic nozzle provers, bell provers, differential test bench, temperature calibration bench, pressurized leak tester, complete cleaning and repaint station



**OBSESSIVE**  
**ABOUT HOW WE DO IT.**

*Reliable, Quality-Driven, 3rd Generation Family-Owned, 100% American Manufacturer since 1978.*





## ALFA Monolithic Isolation Joints

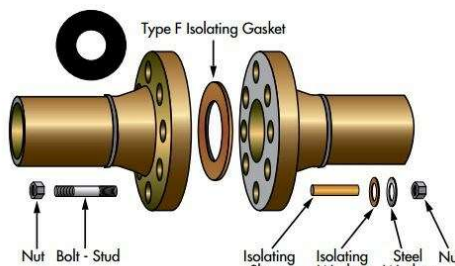
- ◆ Weld-in style, factory manufactured and tested, no field assembly required
- ◆ Double O-ring seal standard, triple O-ring available
- ◆ Internally and externally coated
- ◆ Available from 1/2" to over 120" diameter, ANSI 150-10000
- ◆ 2"-16" diameter, Class 150/300/600 typically stocked in PA for immediate deliveries



Dielectric Unions



Barlow Flange Isolation Joints (factory assembled)



Flanged Isolation Kits (field assembled)



TMK/TMKE Surge Arrestors



**EAGLE RESEARCH<sup>®</sup>**  
**CORPORATION**

## XARTU/1 Cathodic Protection

- ◆ The XARTU/1-CP is designed to provide pipeline operators with a complete range of functions for remote monitoring, data acquisition, and control of cathodic protection systems used on buried steel pipelines
- ◆ Provides current information to assist the operator in minimizing the potential for catastrophic pipeline failures
- ◆ Rectifier monitor available for 110/220VAC applications, monitors any standard CP rectifier
- ◆ Solar-powered test point monitor available for installations far from the rectifier & AC power





# 2023 Calendar of Events (Date/Event/Location)

- ♦ Jan 1/New Years Day
- ♦ Jan 16/MLK Day
- ♦ Jan 16-29-Australian Open
- ♦ Feb 6-9/DistribuTECH/San Diego CA
- ♦ Feb 4-8/AHR Expo/Atlanta GA
- ♦ Feb 7-8/AGA TMC Winter Meeting/Houston TX
- ♦ Feb 14/Valentines Day
- ♦ Feb 12/Super Bowl/Miami FL
- ♦ Feb 20/Presidents Day
- ♦ Feb 28-Mar 2/RNG International Biogas Conf/Atlanta GA
- ♦ Mar 12/Daylight Saving Time Begins
- ♦ Mar 13-15/SGA Spring Gas Conference/Charlotte NC
- ♦ Mar 14-Apr3/March Madness
- ♦ Mar 17/St Patrick's Day
- ♦ Mar 18-Natural Gas Utility Workers' Day
- ♦ Apr 25-28/WEI Operations Conf/Scottsdale AZ
- ♦ Mar 30/MLB Opening Day
- ♦ Apr 6-9/The Masters Golf Tournament/Augusta GA
- ♦ Apr 4-5/WGMSA Conference/Salt Lake City UT
- ♦ Apr 9/Easter Sunday
- ♦ Apr 17-21/CGA Conference & Expo/Orlando FL
- ♦ Apr 18/Tax Day
- ♦ Apr 18-20/Eagle Research Factory Training/Hurricane WV
- ♦ Apr 25-26/APGA Gas Supply Conf/Huntsville AL
- ♦ May 1-4/AGA Ops Conference/Grapevine TX
- ♦ May 2-4/Western States Corrosion/Pomona CA
- ♦ May 5/Cinco day Mayo
- ♦ May 6/Kentucky Derby/Louisville, KY
- ♦ May 14/Mother's Day
- ♦ May 16-18/ISHM Conference/Oklahoma City OK
- ♦ May 18-21/PGA Championship/Tulsa OK
- ♦ May 28/Indy 500/Indianapolis, IN
- ♦ May 28-Jun 11/French Open/Paris France
- ♦ May 29/Memorial Day
- ♦ Jun 1-18/NBA Finals
- ♦ Jun 15-18/US Open Golf/Los Angeles CA
- ♦ Jun 18/Fathers Day
- ♦ Jun 3-16/Wimbledon/London England
- ♦ Jul 1-23/Tour de France/France
- ♦ Jul 4/Independence Day
- ♦ Jul 10-16/Women's World Cup/Australia/NZ
- ♦ Jul 16-19/APGA Annual Conference/Scottsdale AZ
- ♦ Jul 20-23/The Open Championship/Royal Liverpool
- ♦ Jul 11/MLB All Star Game/Seattle WA
- ♦ Jul 31-Aug 3/Appalachian Gas Measurement Short Course/PA
- ♦ Aug 22-23/Western Regional Gas Conference/Scottsdale AZ
- ♦ Aug 28-Sep 10/US Open Tennis/New York NY
- ♦ Sep 4/Labor Day
- ♦ Oct 2-5/WGMSA Fall Board Meeting/Salt Lake City UT
- ♦ Sep 11-14/ASGMT/Houston TX
- ♦ Sep 22-29/Itron Inspire/San Antonio TX
- ♦ Oct 17-19Eagle Research Factory Training/Hurricane WV
- ♦ Oct 23-27/Eagle Research Talon Training/Virtual
- ♦ Sep 17-19/WEI Annual Meeting/Vancouver WA
- ♦ Sep 18-21/AGA Operations Fall Meetings/Pittsburg PA
- ♦ Oct 24-26/APGA Operations Conf/Louisville KY
- ♦ Oct 31/Halloween
- ♦ Nov 5/Daylight Savings Time Ends
- ♦ Nov 7/Election Day
- ♦ Nov 10/Veterans Day
- ♦ Nov 23/Thanksgiving Day
- ♦ Dec 25/Christmas Day

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