

BAUER GRU®

BAUER Solutions for Vapor and Gas Recovery
in Oil Production Facilities



THE CASE FOR METHANE GAS RECOVERY

METHANE
EMISSIONS
25x

MORE DAMAGING TO THE ATMOSPHERE
THAN CARBON DIOXIDE

METHANE

CO₂

THE PROBLEM:

Every day, billions of cubic feet of the world's natural gas are flared or vented into the atmosphere. Not only does natural gas have a detrimental effect on the environment, but its overproduction poses a risk to companies' reputation and adherence to government restrictions.

› DETRIMENTAL ENVIRONMENT EFFECTS:

Methane (CH₄), the major component of natural gas, is 80x more dangerous than carbon dioxide (CO₂) for the first 20 years after it reaches Earth's atmosphere. Over time, methane remains 25x more dangerous than CO₂, because it traps far more heat and releases more energy. Flaring and venting methane gas contributes to an increase in greenhouse gases, which studies have linked to climate change and the disruption of weather cycles.

› REGULATORY FINES:

Regardless of shifts in the political climate, it is a matter of time before greenhouse emissions become more tightly regulated by both federal and state governmental agencies. Environmental compliance is already enforced by many private landowners. In many cases, local authorities have become increasingly vigilant in forcing reduced greenhouse emissions through tough regulations and fines.

› STAINED CORPORATE REPUTATION:

Many public and private companies face enormous pressure from the public, as well as investors and shareholders, to reduce greenhouse emissions. More and more, operators in the energy sector are worried about their corporate image due to increasing pressure from citizens and environmental groups. This could have a large negative impact on attracting additional investment, thus severely hampering future growth potential. To remain viable in the long term, capturing greenhouse gases is a must for all hydrocarbon producers.

› LOST PROFITS:

The practice of venting and flaring methane is nothing short of wasting a valuable source of energy. Technology has evolved which makes capturing and utilizing methane gas more economically viable. Many parts of the world where methane gas is being wasted suffer from a severe shortage of electrical power. The current trend to move away from diesel power - which is used in drilling and fracking - towards electric power will only accentuate these electricity shortages.

THE BAUER SOLUTION:

Flaring and venting methane can be significantly reduced by compressing methane to feed miniature natural gas liquid (NGL) plants to capture valuable hydrocarbons, feed miniature power plants to generate local electricity on-site, or feed a sales pipeline. This can also result in significant additional revenue for the operator.

**13 MILLION
METRIC TONS***
OF METHANE EMISSIONS DISCHARGED INTO
THE ATMOSPHERE EQUALS:

69**
MILLION
VEHICLE
EMISSIONS
FOR 1 YEAR



37**
BILLION
GALLONS
OF GAS



355**
TRILLION
POUNDS OF
COAL BURNED



752**
MILLION
BARRELS OF OIL
CONSUMED



57**
MILLION
HOMES
ENERGY USE
FOR 1 YEAR

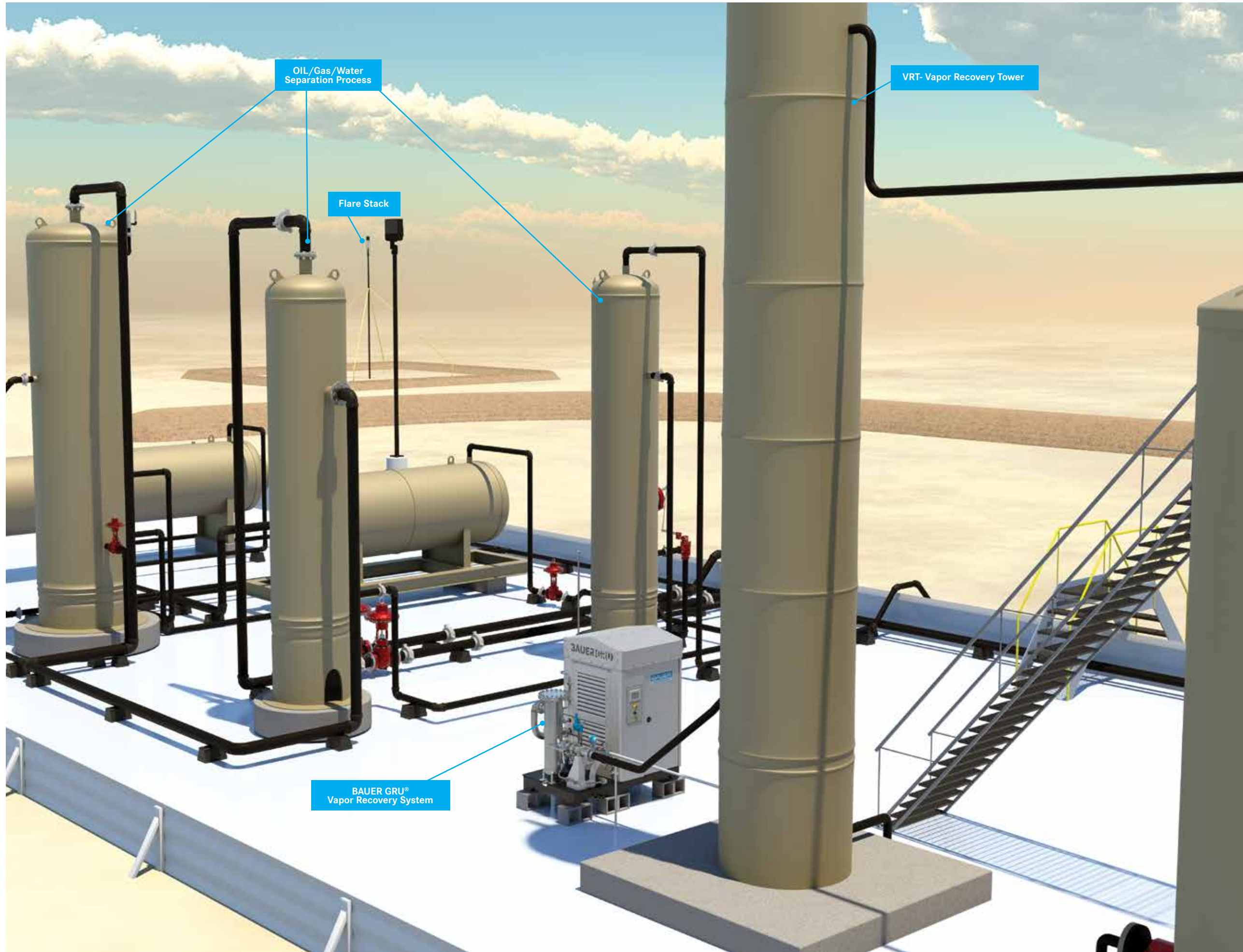


*Study published in The Journal Science based on 2015 methane emissions in the United States

**EPA Greenhouse Gas Equivalences Calculator - www.epa.gov



**DON'T
LET YOUR
POTENTIAL
PROFIT
GO UP IN
FLAMES**



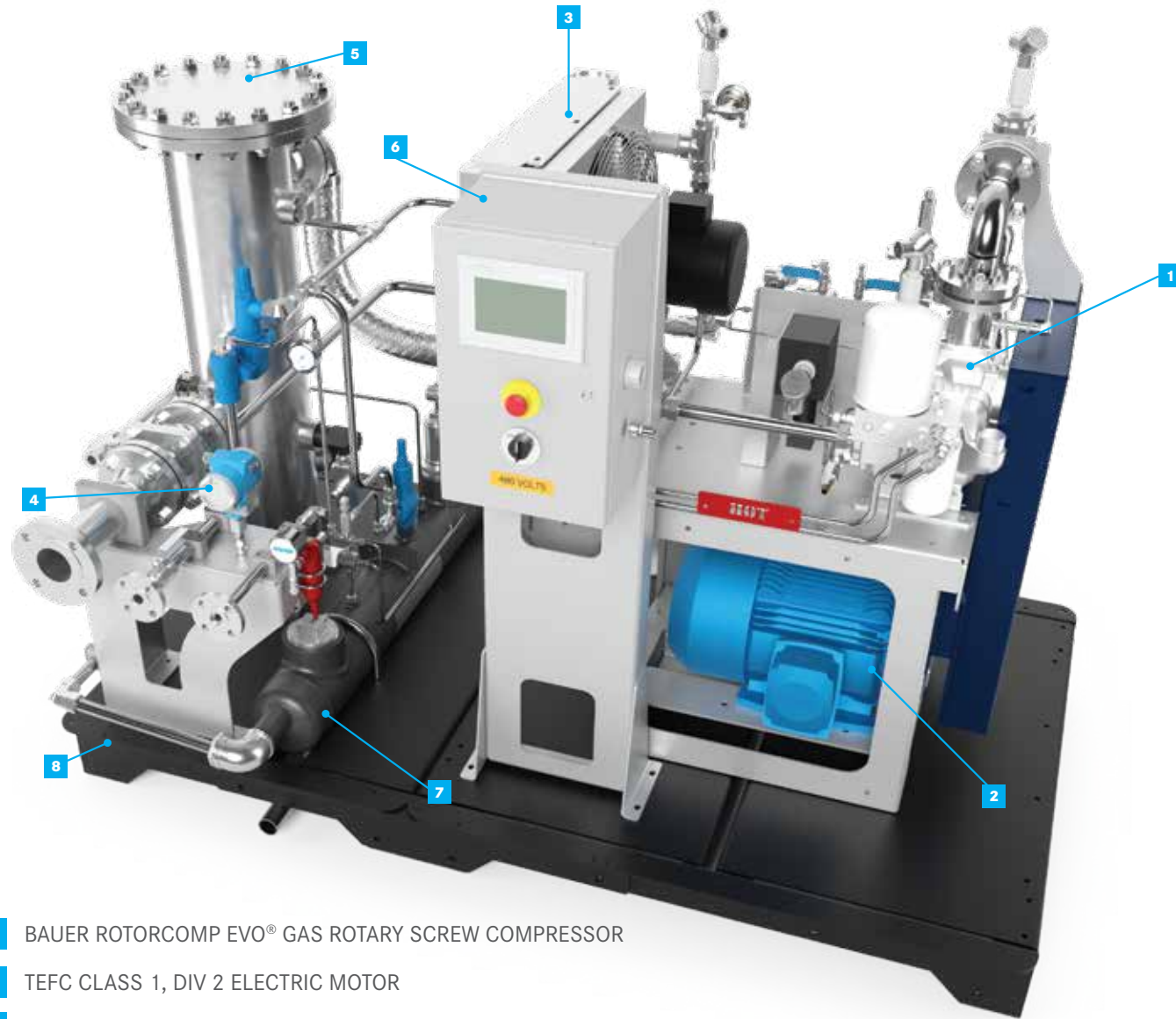
BAUER - COMPLETE SOLUTIONS PROVIDER
For On-Site Methane Gas Recovery and Utilization

BAUER offers total solutions for on-site gas recovery and processing:

- ▶ Vapor recovery units for flash gas recovery
- ▶ Large-volume units for well gas recovery
- ▶ Booster compressor systems for high-pressure pipeline injection
- ▶ On-site electric power generation

BAUER GRU® VAPOR RECOVERY SYSTEMS

The BAUER GRU® Vapor Recovery system range has been specifically designed for gas vapor recovery in oil and gas production facilities. BAUER offers a complete size range from 10 HP to 75 HP. Larger systems (125-500 HP) are available under the GRU® XL line. At the heart of every BAUER GRU® vapor recovery system is the legendary BAUER Rotorcomp® rotary screw compressor, world-renowned for exceptional durability and reliability. The sophisticated control system within the GRU® senses pressure upstream of the unit, and automatically adjusts compressor speed to modulate compressor output based on the availability of gas. If there is an insufficient amount of gas available for compression, the system automatically goes into standby mode, for instantaneous compression when upstream gas pressure suddenly increases. This significantly reduces the “need” to vent gas into the atmosphere, because the compressor is ready to operate instantaneously (compared to ramping up through normal start-up sequences after being completely shut down).



- 1** BAUER ROTORCOMP EVO® GAS ROTARY SCREW COMPRESSOR
- 2** TEFC CLASS 1, DIV 2 ELECTRIC MOTOR
- 3** COMBINATION OIL/GAS AFTERCOOLER
- 4** HIGH ACCURACY/HIGH GRADIENT PRESSURE TRANSDUCER
- 5** INLET GAS COALESSER WITH INTEGRATED MIST REMOVAL FILTER (ALSO AVAILABLE IN STAINLESS STEEL)
- 6** NEMA 4 PLC/ HMI ELECTRICAL CABINET (NOTE: VIARIABLE FREQUENCY MOTOR DRIVE IS LOCATED REMOTE IN NON-HAZARDOUS ZONE)
- 7** CONDENSATE SKID-DUMP SYSTEM
- 8** HEAVY DUTY SKID WITH INTEGRATED FORKLIFT POCKETS AND LIFTING RINGS

STANDARD SCOPE OF SUPPLY

- › Engineered to operate reliably under continuous duty in harsh conditions
- › Designed in accordance with NFPA Class 1, Div 2 standards
- › Variable speed drive for precise flow control
- › Highly accurate pressure transducer at low inlet pressures
- › Stainless steel piping and hardware
- › 24 month full warranty, plus lifetime support
- › BAUER CONNECT® Remote Telemetry & IoT

- › **BAUER GRU® 3-15 VAPOR RECOVERY SYSTEM** with optional enclosure



TECHNICAL DATA - BAUER GRU® VAPOR RECOVERY SYSTEM (FLASH GAS RECOVERY AT LOW SUCTION PRESSURES)

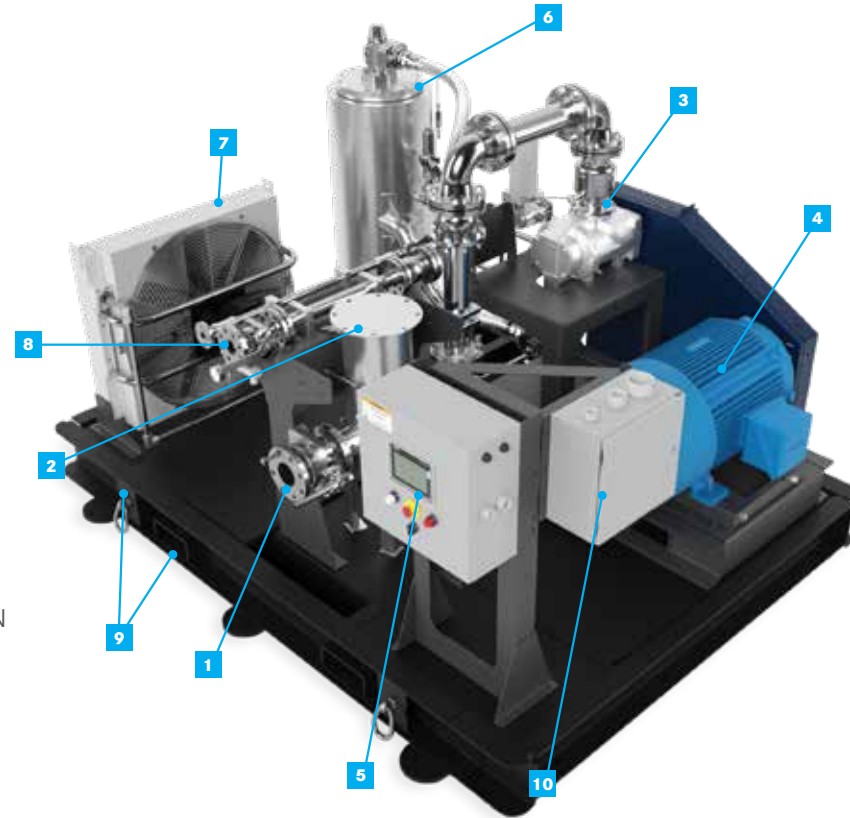
FOR VAPOR RECOVERY APPLICATIONS - AT SUCTION PRESSURE OF 0.25 PSIG (0.017 BAR)														
Model	Motor	Suction Pressure	Final Pressure	At Min RPM				At Max RPM						
				RPM	SCFM	MCFD	M ³ /day (1,000's)	RPM	SCFM	MCFD	M ³ /day (1,000's)			
	HP	KW	PSIG	BAR	PSIG	BAR								
GRU 2-10	10	7.5	0.25	0.017	210	14.5	3000	12	18	0.5	5091	27	38	1.1
GRU 3-15	15	12	0.25	0.017	210	14.5	3500	28	40	1.1	4321	36	52	1.5
GRU 3-25	25	19	0.25	0.017	210	14.5	4000	32	47	1.3	6988	60	86	2.4
GRU 6-30	30	23	0.25	0.017	210	14.5	1800	65	94	2.7	1913	71	102	2.9
GRU 6-40	40	30	0.25	0.017	210	14.5	3500	74	106	3	4408	98	141	4
GRU 6-50	50	38	0.25	0.017	210	14.5	3500	74	106	3	5393	124	179	5.1
GRU 9-60	60	45	0.25	0.017	210	14.5	2000	75	108	3.1	3851	166	240	6.8
GRU 9-75	75	56	0.25	0.017	210	14.5	3900	169	244	6.9	4671	208	299	8.5

NOTES: 1) All performance data for compressed gas inlet (suction conditions) is stated at Standard Conditions: Suction Pressure as Indicated, Gas Temperature of 68° F (20°C) and RH of 0%
 2) All performance data for compressed gas outlet is stated at ISO 1217 Reference Conditions: Absolute Pressure at 364 ft (111m) elevation = 14.5 PSIG (1 Bar), Gas Temperature of 68° F (20°C) and RH of 0% 3) All performance data are based on a typical well gas composition based on the following Mol percentages: Methane 85.4%, Ethane 8%, Propane 2.9%, Butane 1%, Nitrogen 0.7%, Carbon Dioxide 2% 4) BAUER offers a two-stage rotary screw compressor booster option for higher inlet suction pressures and high flow.
 All BAUER GRU® systems are built to Class1, Div2 NFPA standard

BAUER GRU® XL GAS RECOVERY SYSTEMS

The BAUER GRU® (Gas Recovery Unit) XL product range has been specifically designed for high-flow well gas recovery in oil production facilities. At the heart of every GRU® system is the legendary BAUER ROTORCOMP® rotary screw compressor which is world-renowned for exceptional durability and reliability. All BAUER GRU® XL Well Gas Recovery Units are equipped with variable frequency speed control which allows the compressor to automatically adjust to the incoming flow of gas. BAUER offers a complete size range from 100 HP to 750 HP.

- 1 GAS INLET CONNECTION (FLANGED)
- 2 OPTIONAL INLET PARTICULATE FILTER
- 3 BAUER EVO® GAS ROTARY SCREW COMPRESSOR
- 4 TEFC ELECTRIC MOTOR
- 5 HMI/PCC CONTROL PANEL (NEMA4)
- 6 OIL/GAS SEPARATOR
- 7 OIL COOLER
- 8 GAS OUTLET CONNECTION (FLANGED)
- 9 HEAVY DUTY SKID WITH INTEGRATED FORKLIFT POCKETS AND LIFTING RINGS
- 10 ELECTRIC JUNCTION BOX TO ENABLE CONNECTION TO REMOTE MOUNTED VARIABLE FREQUENCY MOTOR CONTROLLER



- › **BAUER GRU® 28-200 GAS RECOVERY SYSTEM**
Available with optional enclosure

TECHNICAL DATA - BAUER GRU® GAS RECOVERY SYSTEM (HIGH-FLOW WITH ELEVATED SUCTION PRESSURES)

FOR GAS RECOVERY APPLICATIONS AT MAX SUCTION PRESSURE FOR SINGLE STAGE GRU® ROTARY SCREW COMPRESSOR SYSTEM									
Model	Motor		At Max RPM						
	HP	KW	Suction Pressure PSIG	BAR	Final Pressure PSIG	BAR	SCFM	MMCFD	M ³ /day (1,000's)
GRU15-100	100	75	35	2.4	210	14.5	716	1.0	29.2
GRU15-125	125	90	35	2.4	210	14.5	873	1.25	35.6
GRU 28-150	150	110	35	2.4	210	14.5	1279	1.84	52.2
GRU 28-200	200	150	35	2.4	210	14.5	1475	2.14	60.1
GRU 42-350	350	260	35	2.4	210	14.5	2490	3.58	101.5
GRU15 Duplex	250	180	35	2.4	210	14.5	1746	2.5	71.2
GRU 28 Duplex	400	300	35	2.4	210	14.5	2950	4.28	120.2

NOTES: 1) All performance data for compressed gas inlet (suction conditions) is stated at Standard Conditions: Suction Pressure as Indicated, Gas Temperature of 68° F (20°C) and RH of 0% 2) All performance data for compressed gas outlet is stated at ISO 1217 Reference Conditions: Absolute Pressure at 364 ft (111m) elevation = 14.5 PSIG (1 Bar), Gas Temperature of 68° F (20°C) and RH of 0% 3) All performance data are based on a typical well gas composition based on the following Mol percentages: Methane 85.4%, Ethane 8%, Propane 2.9%, Butane 1%, Nitrogen 0.7%, Carbon Dioxide 2% 4) BAUER offers a two-stage rotary screw compressor booster option for higher inlet suction pressures and high flow. All BAUER GRU® systems are built to Class 1, Div2 NFPA standard

BAUER GRU® MB5 ROTARY SCREW GAS BOOSTER COMPRESSOR

For Pipeline Injection and High Pressure Gas Turbine Applications

The BAUER GRU® MB5 Gas Booster utilizes rotary screw compressor technology and has been specifically designed for biomethane injection into the pipeline grid for applications where higher pressures (up to 1100 PSIG) are required. The BAUER GRU® MB5 rotary screw booster is also suitable for large gas turbine power generators that require higher gas inlet injection pressures.

All BAUER GRU® Booster units are equipped with variable frequency speed control which allows the compressor to adjust to the incoming flow of gas. Utilizing a rotary screw booster compressor is advantageous over reciprocating piston compressors due to the higher reliability and lower cost of ownership of rotary screw compressors especially in continuous duty applications.

BROAD PERFORMANCE RANGE

The BAUER GRU® MB5 is the perfect match-up to the GRU biogas recovery compressor system since the GRU MB5 utilizes the outlet pressure generated by GRU Biogas Recovery Compressor to boost the pressure of the biogas up to pipeline pressure or pressure required by the gas turbine generator system.

- › **Inlet pressure range:** 73 - 363 PSIG (5 - 25 BAR)
- › **Horsepower range:** 50-350 HP (37-260 kW)
- › **Biogas Flow Rate:** 321 - 2300 SCFM (545.4 - 3907.6 nm³/hr)
- › **Final pressure:** 300-1100 PSIG (21 - 76 BAR)

STANDARD SCOPE OF SUPPLY

- › Heavy-duty rotary screw booster compressor at the heart of the system
- › Variable speed control of compressor to modulate the flow of biogas based on the incoming supply of gas (VF drive located remote from skid as defined by Class 1, Div 2 code requirements per NEC NFPA70)
- › Heavy-duty TEFC electric motor
- › Stainless steel construction of piping and major P&ID components
- › PLC control of all major system components
- › BAUER CONNECT® remote telemetry IoT with Modbus TCP/IP or Profinet connection capability
- › Fully integrated system built on a heavy-duty steel skid designed for plug and play installation

SYSTEM FOOTPRINT

- › 96" W X 240" L X 96" H (2438mm W X 6096mm L X 2438mm H) estimated dimensions

TECHNICAL DATA

FOR GAS BOOSTING APPLICATIONS AT ELEVATED SUCTION PRESSURE AND FINAL PRESSURES UP TO 600 PSIG (ROTARY SCREW COMPRESSOR BOOSTER)									
Model	Motor		At Stated Max RPM						
	HP	KW	Compressor Model	Suction Pressure PSIG	BAR	Max Final Pressure PSIG	BAR	SCFM	M ³ /HR
GRUMB5-50	50	37	MB5	73	5	300	20	321	545
GRUMB5-200	200	150	MB5	174	12	435	30	2052	3486
GRUMB5-300	300	220	MB5	247	17	870	60	2117	3597
GRUMB5-350	350	260	MB5	363	25	1088	75	2322	3944

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CODES AND STANDARDS

- › **Hazardous area classification:** NFPA 52 / 70, Class 1, Division 2
- › **Pressure vessel code compliance:** ASME
- › **Electrical code compliance:** NEC , UL/control panels and assemblies
- › **Certified manufacturing organization:** ISO 9001-2015

BAUER CONNECT®



IOT REMOTE TELEMETRY AND CONTROL

BAUER CONNECT® is an app and internet-based IoT solution which allows BAUER customers to remotely monitor - and control - the performance of the entire BAUER system through any wireless mobile device or computer; anytime, anywhere.

Key Features: allow customers to increase efficiency and productivity, save time, do more with fewer resources, enjoy lower operational costs, and have total flexibility with a solution tailored specifically for the end-user.

BAUER CONNECT® - Connection that matters.

BAUER REMOTE HMI

The BAUER Remote HMI function allows factory-trained technical personnel to remotely control the BAUER system via the BAUER CONNECT® App with the same functionality as if one were standing in front of the actual unit.

MOBILE DASHBOARDS

BAUER CONNECT® App will also display a real-time graphical display of the entire system (SCADA view). The Mobile Dashboard feature provides information such as compressor system status, error log, critical pressures and temperatures, and volume of air dispensed in storage information, etc.

NOTIFICATIONS

The BAUER CONNECT® Mobile App will send push notifications if certain critical parameters of the BAUER system fall outside of normal operating range or if triggered by a system alert. This assures that essential personnel is notified immediately, thus allowing for pro-active intervention in a situation that could potentially be detrimental to the BAUER system as well as the customer's operation.

BAUER REPORTS

The BAUER Reports feature is a function that generates custom reports tailored to the specific needs of the customer. Customers can have access to historical data via a multitude of standard and customized reports.

BAUER PREDICTIVE ANALYTICS




This feature of BAUER CONNECT® provides a new pro-active dimension to perpetually maintaining customers' compressor systems at peak conditions with minimum downtime. BAUER's predictive analytics algorithm uses artificial intelligence to analyze the collected system information on the BAUER Cloud to predict upcoming maintenance requirements and preventative actions to avoid unplanned shutdowns.

TO LEARN MORE VISIT

bauer-connect.com

GLOBAL SERVICE

-  GLOBAL SERVICE REACH
-  FACTORY TRAINED TECHS

-  BAUER Germany & BAUER Norfolk
-  BAUER Branches
-  BAUER Service Centers/Distributors




SERVICE AND SUPPORT

Our compressors are designed with you in mind. Easy to use manuals guide you through clear, mechanically accessible repairs. Our worldwide distribution network was developed to assist in after-sales support, along with product and maintenance parts assistance.

FROM THE SOURCE

BAUER COMPRESSORS INC., is certified with **ISO 9001:2015** quality processes providing you with confidence that cannot be duplicated by sub-standard after-market parts and service.

BAUER HELPDESK

-  24/7 PHONE TECH SUPPORT
-  LIFECYCLE PERFORMANCE

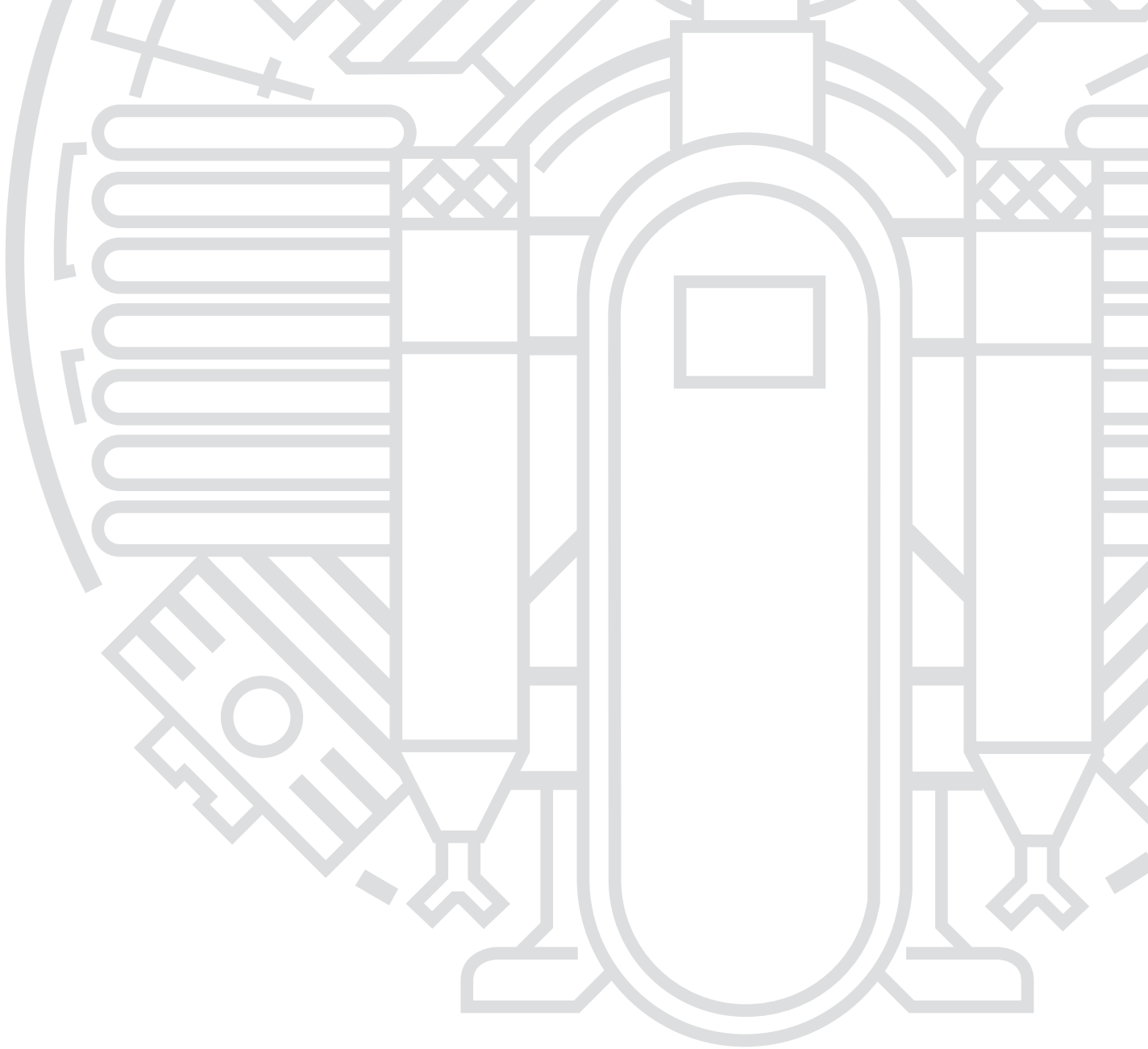
MECHANICAL & ELECTRICAL

Total customer satisfaction is our top priority. BAUER provides 24/7 phone tech and troubleshooting support at our BAUER helpdesk. Our support continues throughout our warranty period and beyond.

»» For BAUER helpdesk please email:
CustomerService@BauerComp.com
or call at:

1-(844)-500-5822





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