



# VGE & VGI *Technical Description*

OIL-INJECTED ROTARY SCREW GAS COMPRESSORS  
DRY METHANE GASPACK

Capacity from 22 to 92 Nm<sup>3</sup>/h  
Pressure from 5.5 to 6.0 bar(g)  
Power from 4.0 to 11 kW



## VGE, ATEX zone 2 optimized solution.

Adicomp, after many years of experience in the construction, commissioning and maintenance of natural gas compressor to feed Micro-turbines, in cooperation with some Capstone distributors has managed to develop a new range called VGE Fuel Gas Booster with the following extraordinary characteristics:

- Screw block with standard triple lips oil seal (two internal for the oil and one external for the dust) rotating at ideal speed to get maximum efficiency and improve power consumption at full load;
- Electric motor are always fitted with re-greasing nipples rotating at very conservative speed and improving reliability;
- Very big range of flow regulation by changing speed. Below minimum speed by passing the gas into suction - Power saving at partial load also;
- No gas emission into atmosphere at any condition (at stop the gas will be expanded into adequate pressure vessel placed at suction);
- Less maintenance requirements (at 8000 working hours just replace oil and filters and re-grease motor bearings).

This new unit comes in five version:

- **VGE 4.0-6.0AD INV (OF) or (S) or (WS)**
- **VGE 5.5-6.0AD INV (OF) or (S) or (WS)**
- **VGE 7.5-6.0AG INV (OF) or (S) or (WS)**
- **VGE 9.0-6.0AG INV (OF) or (S) or (WS)**
- **VGE 11.0-6.0BD INV (OF) or (S) or (WS)**



**(OF)** = open frame  
**(S)** = silenced for indoor installation  
**(WS)** = silenced for outdoor installation

For multiple installation it's strongly recommended to install a compressor management controller to optimizing the functioning of all units and saving power energy. All our models for compressing natural gas comply to current European standards and are manufactured according to IEC/EN60079 and can be installed into classified ATEX zone 2 (94/9/CE). When they're installed into a no-classified area (safe area), the electric panel (standard) can be mounted onto the actual compressor unit, reducing installation's costs and possible mistakes. Adicomp is also pleased to announce that all above mentioned units can be supplied (as an option) with a "durably technically tight" declaration in accordance to European normative EN 1127-1:2011 (to simplify TUV or equivalent body approval, etc.)



# VGI, the best way to generate power.

Adicomp is proud to present the new VGI Fuel Gas Booster for methane and natural gas that can be integrated into Capstone C200 Microturbine and multiple versions.

This new unit comes in four version:

- **VGI 7.5-6.0AG INV (DC)** – suitable for C200 Microturbine in “stand alone” (760VDC supply voltage).
- **VGI 7.5-6.0AG INV (DCM)** – suitable for C600-800-1000 Microturbine in “stand alone” (760VDC supply voltage), designed for centralized position of gas inlet.
- **VGI 7.5-6.0AG INV (AC)** – suitable for C200 Microturbine – that works by a separate electric supply at 400V/3ph/50Hz.
- **VGI 7.5-6.0AG INV (ACM)** – suitable for C600-800-1000 Microturbine – that works by a separate electric supply at 400V/3ph/50Hz, designed for centralized position of gas inlet.

All versions are using an oil injected screw compressor with speed up gear and mechanical seal (SCA8G-MS) directly coupled to a 9.2 kW - 4 pole (1455 rpm) electric IE2 motor IP55 (oversized to operate also in high ambient temperature).

The DC “stand alone” version is fitted with an inverter (VSD technology) that works at 760VDC/400VAC-3ph-50Hz and uses the FCB (Fuel Control Board) with J connections of Microturbine. The AC “stand alone” version is fitted with an inverter (VSD technology) that works at 400VAC-3ph-50Hz and it's supplied with an Adicomp electric control panel managed by the S1-20 electronic control panel.

Both versions above mentioned are designed by a separate electric fan (400VAC-3ph-50Hz) to cool both oil and gas, blowing air through a cooler correctly sized.

## outstanding features:

- A very low power consumption at full load (only 8.5kW adsorbed), due to optimal tip speed of screw compressor and electric motor with high efficiency (IE2);
- Possibility of a wide range of flow regulation (from 25Hz to 50Hz) by changing motor speed (VSD technology). Power saving at partial load also;
- Many instruments at sight (suction pressure, oil gas pressure, discharge temperature, inverter keypad panel);
- Operating on safety conditions (safety valve on gas/oil pressure vessel, purge connections for inertization);
- Easy access for normal maintenance (oil change, filter change and oil/gas separator change placed up in front);
- Long maintenance intervals (every 8.000 working hours);
- Units are in accordance to European Standards for turbine installations.



# VGE & VGI products overview

| SPECIFICATION/MODEL  | U.M.              | VGE 4.0-6.0 AD INV (Ex) | VGE 5.5-6.0 AD INV (Ex) | VGE 7.5-6.0 AG INV (Ex) | VGE 9.0-6.0 AG INV (Ex) | VGE 11.0-6.0 BD INV (Ex) | VGI 7.5-6.0 AG INV (AC)    | VGI 7.5-6.0 AG INV (DC)    |
|--|-------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|----------------------------|----------------------------|
| Suction pressure   | mbar              | 15-100                  | 15-100                  | 15-100                  | 15-100                  | 15-100                   | 15-100                     | 15-100                     |
| Suction temperature (min/max)                                    | °C                | -10/+40                 | -10/+40                 | -10/+40                 | -10/+40                 | -10/+40                  | -10/+40                    | -10/+40                    |
| GAS humidity   | type              | dry                     | dry                     | dry                     | dry                     | dry                      | dry                        | dry                        |
| Free Gas Delivery (min/max)                                      | m <sup>3</sup> /h | 0<22 <sup>1)</sup> <32  | 0<22<48                 | 0<32<66                 | 0<35<74                 | 0<48<92                  | 0<35<66 (74) <sup>2)</sup> | 0<35<66 (74) <sup>2)</sup> |
| Operating pressure   | bar(g)            | 5.5 - 6.0               | 5.5 - 6.0               | 5.5 - 6.0               | 5.5 - 6.0               | 5.5 - 6.0                | 5.5 - 6.0                  | 5.5 - 6.0                  |
| Discharge pressure (max)   | bar(g)            | 6.5                     | 6.5                     | 6.5                     | 6.5                     | 6.5                      | 6.5                        | 6.5                        |
| Ambient temperature  | °C                | -20/+40                 | -20/+40                 | -20/+40                 | -20/+40                 | -20/+40                  | -20/+40                    | -20/+40                    |
| Discharge gas temperature (above ambient)                        | °C                | 10                      | 10                      | 10                      | 10                      | 10                       | 10                         | 10                         |
| Residual Oil in Gas  | mg/m <sup>3</sup> | 3-4                     | 3-4                     | 3-4                     | 3-4                     | 3-4                      | 3-4                        | 3-4                        |
| Residual Oil in Gas (Fine Filtration Optional)                   | mg/m <sup>3</sup> | 0.1                     | 0.1                     | 0.1                     | 0.1                     | 0.1                      | 0.1                        | 0.1                        |
| Oil quantity (Service)   | l                 | 5                       | 5                       | 5                       | 5                       | 5                        | 5                          | 5                          |
| Screw type   | Model             | SCA8                    | SCA8                    | SCA8G                   | SCA8                    | SCA9                     | SCG8                       | SCG8                       |
| Noise level ( <b>OF Version</b> ) ±3%                            | dB(A)             | 75                      | 76                      | 78                      | 80                      | 80                       | 80                         | 80                         |
| Noise level ( <b>S &amp; WS Version</b> ) ±3%                    | dB(A)             | 70                      | 70                      | 70                      | 72                      | 72                       | -                          | -                          |
| Power Supply (Voltage)   | V                 | 400VAC                  | 400VAC                  | 400VAC                  | 400VAC                  | 400VAC                   | 400VAC                     | 760VDC                     |
| Power absorbed at min/max motor speed                            | kW                | 2.4 < 3.5               | 2.4 < 5.5               | 3.6 < 7.5               | 4.0 < 8.9               | 4.0 < 10.9               | 3.6 < 7.5 (8.5)            | 3.6 < 7.5 (8.5)            |
| <b>MAIN ELECTRIC MOTOR DATA</b>                                  |                   |                         |                         |                         |                         |                          |                            |                            |
| Nominal power ( <b>Ex nA</b> ) Anti-spark De-rated <sup>3)</sup> | kW                | 5.5                     | 7.5                     | 9.0                     | 11                      | 15                       | -                          | -                          |
| Nominal Power Standard Version                                   | kW                | -                       | -                       | -                       | -                       | -                        | 9.2                        | 9.2                        |
| Efficiency class   | Cl.               | IE2                     | IE2                     | IE2                     | IE2                     | IE2                      | IE2                        | IE2                        |
| Nominal speed  | rpm               | 3000                    | 3000                    | 1500                    | 1500                    | 3000                     | 1500                       | 1500                       |
| Voltage  | V                 | 400                     | 400                     | 400                     | 400                     | 400                      | 400                        | 400                        |
| Current  | A                 | 10.8                    | 14.3                    | 18.1                    | 21.0                    | 28.0                     | 19.7                       | 19.7                       |
| Frequency  | Hz                | 50                      | 50                      | 50                      | 50                      | 50                       | 50                         | 50                         |
| Efficiency   | η%                | 88.1                    | 88.8                    | 89.3                    | 90.8                    | 91.0                     | 91.0                       | 91.0                       |
| Degree of protection   | IP                | 55                      | 55                      | 55                      | 55                      | 55                       | 55                         | 55                         |
| <b>MOTOR FAN SPECIFICATIONS</b>                                  |                   |                         |                         |                         |                         |                          |                            |                            |
| Nominal Power ( <b>Ex nA</b> ) Anti-spark                        | kW                | 0.25                    | 0.25                    | 0.25                    | 0.25                    | 0.25                     | -                          | -                          |
| Nominal Power Standard Version                                   | kW                | -                       | -                       | -                       | -                       | -                        | 0.25                       | 0.25                       |
| Nominal speed  | rpm               | 1400                    | 1400                    | 1400                    | 1400                    | 1400                     | 2800                       | 2800                       |
| Voltage  | V                 | 400                     | 400                     | 400                     | 400                     | 400                      | 400                        | 400                        |
| Frequency  | Hz                | 50                      | 50                      | 50                      | 50                      | 50                       | 50                         | 50                         |
| Efficiency   | η%                | 60.8                    | 60.8                    | 60.8                    | 60.8                    | 60.8                     | 61.4                       | 61.4                       |
| Degree of protection   | IP                | 55                      | 55                      | 55                      | 55                      | 55                       | 55                         | 55                         |
| <b>DIMENSIONS</b>  |                   |                         |                         |                         |                         |                          |                            |                            |
| Dimensions   | cm                | 130x75x128              | 130x75x128              | 130x75x128              | 130x75x128              | 130x75x128               | 135x81x42                  | 135x81x42                  |
| GAS connections (In-Out)   | Rp/EN             | 1"1/4 - 3/4"            | 1"1/4 - 3/4"            | DN40 - 3/4"             | DN40 - 3/4"             | DN50 - 3/4"              | 2"BSP - 1"1/6 12UNF        | 2"BSP - 1"1/6 12UNF        |

1) Using 2.7 kW when the compressor delivers 23 Nm<sup>3</sup>/h;

2) Using 8.5 kW when the compressor delivers 74 Nm<sup>3</sup>/h;

3) Anti-spark electric motors (Ex nA) type are used when they need to be de-rated by 20% for safety reasons under inverter.









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Rev. December 2015

