PSA type Nitrogen Gas Generator for Laser Beam Machine

PSA Type Nitrogen Gas generator

BELLSWING

N2-PSA SYSTEM
**Features**

- Reduced gas cost
  
  *BELLSWING’s ultra-long continuous operating hours make the gas cost considerably less.*
  
  The longer it operates, the cheaper the unit gas cost.
  
  *Two energy saving methods are available for reducing running cost.*
  
- The compactifying design, which uses unique adsorbent of our own development, reduces installation space to half that of conventional types.
  
- All models are equipped with a touch panel for centralized control of various information.
  
- Just a single touch of a button and nitrogen gas is provided in about 10 minutes after start-up.
  
- Bothersome work of replacing compressed gas cylinders or replenishing tanks are dispensed with.
  
  Thanks to the incessant gas supply, there is no worry of running out of gas during the night.
  
- A wide variety of products to accommodate different works.

**Specifications**

<table>
<thead>
<tr>
<th>Nitrogen gas specifications</th>
<th>Low-pressure standard types</th>
<th>Medium to high-pressure types; High purity type; Energy saving types (can be freely assorted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>KN4-18MHP</td>
<td>KN4-30MHP</td>
</tr>
<tr>
<td></td>
<td>KN5-30SP-CH</td>
<td>KN5-40SP-CH</td>
</tr>
<tr>
<td></td>
<td>KN5-50SP-CH</td>
<td>KN5-60SP-CH</td>
</tr>
<tr>
<td></td>
<td>KN5-100SP-CH</td>
<td></td>
</tr>
<tr>
<td>Purity (%)</td>
<td>99.99%</td>
<td>99.999% (10 ppm or lower residual oxygen concentration made possible by hydrogen-added purification method)</td>
</tr>
<tr>
<td>Volume generated (Nm³/h)</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Gas pressure (MPa)</td>
<td>0</td>
<td>Max. 3.0 for medium pressure; Max. 4.5 for high pressure</td>
</tr>
<tr>
<td>Energy saving method</td>
<td>No-load running method</td>
<td>No-load running during suspension of gas supply implements a 70% energy saving.</td>
</tr>
<tr>
<td></td>
<td>Accumulator method</td>
<td>Shutdown during accumulated status implements a nearly 100% energy saving</td>
</tr>
<tr>
<td>PSA device</td>
<td></td>
<td>Pressure Swing Adsorption * Energy saving, package type noiseproof model</td>
</tr>
<tr>
<td>Type/Specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (m)</td>
<td>1.2x1.1x2.0</td>
<td>1.2x1.3x2.0</td>
</tr>
<tr>
<td></td>
<td>1.4x0.8x1.8</td>
<td>1.6x0.9x1.9</td>
</tr>
<tr>
<td></td>
<td>1.7x1.0x1.9</td>
<td>1.7x1.0x2.0</td>
</tr>
<tr>
<td></td>
<td>1.6x1.6x2.5</td>
<td></td>
</tr>
<tr>
<td>Compressor</td>
<td>Type</td>
<td>Equipped with dryer/air cooling/lubrication necessary/screw type</td>
</tr>
<tr>
<td></td>
<td>Motor output(kw)</td>
<td>15                                           22                                           22                                           30                                           37                                           45                                           75</td>
</tr>
<tr>
<td>Purifier</td>
<td>Type</td>
<td>- Hydrogen addition type (hydrogen gas to be prepared by user)</td>
</tr>
<tr>
<td>Pressurizer</td>
<td>Type</td>
<td>- Air-cooling/lubrication necessary/reciprocating (single stage compression for medium pressure; two-stage compression for high pressure)</td>
</tr>
<tr>
<td></td>
<td>Motor output(kw)</td>
<td>- 5.5                                         5.5/7.5                                       5.5/7.5                                       7.5                                          11/15</td>
</tr>
<tr>
<td>Buffer tank</td>
<td>Type</td>
<td>Housed in main body</td>
</tr>
</tbody>
</table>

※1 Nitrogen gas purity: Purity of product gas with oxygen component removed is represented by nitrogen gas, the major remaining component.

※ Listed above is a typical example. Please ask for other specifications.

※ Specifications are subject to change without notice.
BELLSWING, PSA type nitrogen gas generator for laser beam machine

Medium to High Pressure, High Purity Type

- BELLSWING uses hydrogen-addition type nitrogen gas purifier to generate high purity nitrogen gas with 10 ppm or lower residual oxygen concentration.
- Air-cooling, reciprocating type pressurizer, which excels in cost-effectiveness, is employed to accumulate medium pressure (3.5 MPa) to high pressure (4.5 MPa) nitrogen gas.
- Medium pressure (3.5 MPa) to high pressure (4.5 MPa) high purity nitrogen gas can be continuously supplied to the laser beam machine.

Energy saving method

Two methods, 'No-load running method' and 'Accumulator method' are available.

Accumulator method (Eco-Pressure)
Nitrogen gas is accumulated in a large volume tank (1,200 liter) up to a high pressure of 4.5 MPa, then the compressor and pressurizer are halted until the pressure inside the tank decreases to a prescribed level, thus realizing a nearly 100% energy saving.

No-load running method (Eco-Cycle)
PSA senses gas-supply status, suppressing air consumption if gas supply is suspended, thus implementing about a 70% energy saving by no-load running of the compressor. Large volume tank can be dispensed with, offering increased cost-effectiveness.

Low Pressure Type
Purity: 99.99%; Gas pressure: 0.78 Mpa
Continuous supply: 18Nm³/h (300 NL/min) - 30Nm³/h (500 NL/min)

- Housing the buffer tank in the PSA main body allowed substantial space-saving in installation.
- A simple system configuration that does not involve pressurizer.
A touch-panel display presents various operational information. Also various settings can be made on the display screen.

- Information displayed
  - Storing and display of causes of starts and stops (most recent 10 incidents).
  - Storing and display of causes of anomalies
  - Display of running status
  - Display of maintenance information

- Settings and controlling functions
  - Unattended operation by weekly-timer
  - Automatic control by detecting coupled operation with external devices and weighing the value of incoming information
  - Changing of preset values (protected by password)

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BELLSWING, PSA type nitrogen gas generator for laser beam machine

INOMAP display during operation

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