# MNG SERIES PSA NITROGEN GENERATOR

Pressure Swing Adsorption (PSA) type Nitrogen Generation system that is used to separate and enrich Nitrogen from Oxygen employs CMS (Carbon Molecular Sieve) for adsorbent. Carbon Molecular Sieve (CMS) adsorbs Oxygen and Water Vapor molecules under certain pressure while allowing Nitrogen to pass through.

## The Nitrogen Generator is a Two-Bed Adsorber System

The Nitrogen Generator consists of two adsorber vessels filled with CMS, a valve assembly, air filters, main pressure regulator, and a product receiver tank. Clean and dry air is directed to one of the adsorber beds where oxygen and water vapor is adsorbed faster than nitrogen in the pore structure of the CMS, thus increasing the nitrogen purity of the product gas stream to the desired level (95-99.999% as required by customer). This product flows out from the top of the adsorber bed, through the valve and into the product receiver at a pressure slightly below the feed air pressure.



## Applications

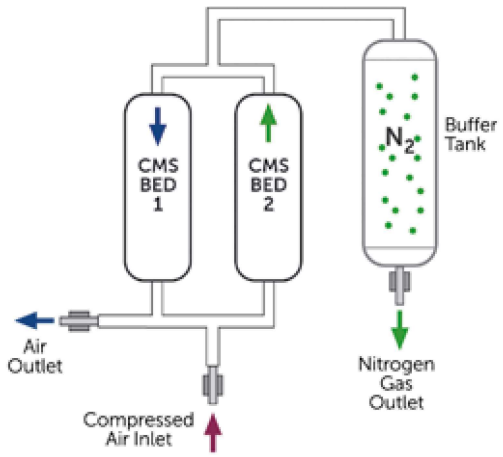
- Metal industry
- Chemical industry
- Purge
- Plastic industry
- Charge nitrogen gas in tires
- Production process and storage of food

## Standard

- Oxygen Analyzer / Nitrogen Purity Sensor
- Flow Meter
- Carbolescer with oil indicator
- Nitrogen Generator / Silencer
- Basic Logo or Crouzet mini plc for modular type
- Siemens HMI color touch screen PLC for twin towers
- Buffer Tank (Standard for MNG 10 to MNG 2050)
- T Filters are standard in all models

## Optional

- Dew Point Sensor



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## Features

- Simple structure, compact design, full automated operation
- Replaces manifold usage (see pic .1)
- Touch Screen PLC for controlling the complete system (see pic. 2)
- PLC Screen for monitoring and visualizing the progress
- Rapid start-up and safety system
- Superior silencer design gives low noise levels during depressurization and purge
- Durable piston valves for long-life operation (see pic. 5)
- On demand production, low cost
- High performance
  *The purity and capacity of nitrogen gas is designed to meet customer requirements (Nitrogen Purity 95%~99.999% is available)
- Minimum maintenance cost.
  *Replace filter element periodically only and service your compressor as normal

Replaces Manifold Usage - Pic. 1


Touch Screen PLC - Pic. 2

Dew Point Sensor - Pic. 3

Long Life Piston Valve - Pic. 5

Air Filter

# MNG SERIES PSA NITROGEN GENERATOR

## Technical Specifications

| Model | Air Demand @ Following Purity Level ($m^3/h$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 95% | 97% | 98% | 99% | 99.50% | 99.90% | 99.95% | 99.99% | 99.999% | |
| MNG-10 | 5,6 | 5,0 | 4,5 | 4,0 | 3,6 | 3,1 | 2,8 | 2,5 | 2,0 | Modular |
| MNG-20 | 9,0 | 8,0 | 7,3 | 6,4 | 6,2 | 5,0 | 4,5 | 4,0 | 3,3 | |
| MNG-35 | 16,6 | 14,8 | 13,4 | 11,8 | 10,8 | 9,1 | 8,3 | 7,4 | 6,0 | |
| MNG-60 | 27,6 | 24,6 | 22,4 | 19,6 | 17,9 | 15,2 | 13,8 | 12,3 | 10,0 | |
| MNG-95 | 47,5 | 42,4 | 38,5 | 33,7 | 30,9 | 26,2 | 23,7 | 21,1 | 17,2 | Twin Tower |
| MNG-120 | 63,4 | 56,6 | 51,4 | 45,1 | 41,3 | 35,0 | 31,7 | 28,2 | 23,0 | |
| MNG-150 | 77,6 | 69,2 | 62,9 | 55,1 | 50,5 | 42,9 | 38,8 | 34,5 | 28,1 | |
| MNG-250 | 123,5 | 110,2 | 100,1 | 87,7 | 80,4 | 68,3 | 61,7 | 55,0 | 44,8 | |
| MNG-330 | 163,5 | 145,8 | 132,5 | 116,1 | 106,4 | 90,3 | 81,7 | 72,7 | 59,3 | |
| MNG-450 | 220,9 | 197,0 | 179,1 | 156,9 | 143,8 | 122,1 | 110,4 | 98,3 | 80,1 | |
| MNG-510 | 253,0 | 225,7 | 205,1 | 179,8 | 164,7 | 139,8 | 126,5 | 112,6 | 91,7 | |
| MNG-570 | 281,0 | 250,6 | 227,8 | 199,6 | 182,9 | 155,3 | 140,5 | 125,1 | 101,9 | |
| MNG-730 | 367,8 | 328,1 | 298,2 | 261,3 | 239,3 | 203,3 | 183,9 | 163,7 | 133,3 | |
| MNG-910 | 450,0 | 401,3 | 364,8 | 319,6 | 292,8 | 248,7 | 224,9 | 200,2 | 163,1 | |
| MNG-1110 | 547,0 | 487,9 | 443,5 | 388,6 | 355,9 | 302,3 | 273,4 | 243,4 | 198,3 | |
| MNG-1230 | 603,4 | 538,2 | 489,2 | 428,7 | 392,7 | 333,5 | 301,6 | 268,5 | 218,8 | |
| MNG-1370 | 668,6 | 596,4 | 542,1 | 475,0 | 435,1 | 369,5 | 334,2 | 297,6 | 242,4 | |
| MNG-1820 | 904,1 | 806,3 | 732,9 | 642,2 | 588,3 | 499,6 | 451,9 | 402,3 | 327,7 | |
| MNG-2050 | 1054,7 | 940,3 | 854,7 | 748,9 | 686,0 | 582,6 | 527,0 | 469,2 | 382,2 | |
| MNG-2550 | 1263,9 | 1127,2 | 1024,6 | 897,8 | 822,4 | 698,4 | 631,8 | 562,5 | 458,2 | |
| MNG-2950 | 1558,9 | 1390,4 | 1263,8 | 1107,4 | 1014,4 | 861,5 | 779,2 | 693,8 | 565,1 | |
| MNG-3540 | 1827,0 | 1629,5 | 1481,1 | 1297,8 | 1188,8 | 1009,6 | 913,2 | 813,1 | 662,3 | |
| MNG-4160 | 2106,8 | 1879,0 | 1708,0 | 1496,6 | 1370,9 | 1164,2 | 1053,1 | 937,6 | 763,7 | |
| MNG-5560 | 2536,2 | 2261,9 | 2056,0 | 1801,7 | 1650,1 | 1432,9 | 1267,6 | 1128,5 | 920,0 | |
| MNG-6050 | 3218,5 | 2816,3 | 2558,4 | 2239,8 | 2058,9 | 1745,0 | 1581,7 | 1400,0 | 1129,5 | |
| MNG-7500 | 3829,0 | 3350,4 | 3043,6 | 2664,6 | 2449,3 | 2075,9 | 1881,7 | 1665,5 | 1343,7 | |
| MNG-9170 | 4183,1 | 3730,6 | 3390,9 | 2971,3 | 2720,7 | 2363,4 | 2091,0 | 1861,3 | 1516,7 | |
| MNG-11200 | 5108,8 | 4556,4 | 4142,5 | 3629,1 | 3323,3 | 2886,8 | 2553,8 | 2273,7 | 1851,7 | |

| | 95% | 97% | 98% | 99% | 99,50% | 99,90% | 99,95% | 99,99% | 99.999% |
|---|---|---|---|---|---|---|---|---|---|
| A/N Ratios | 2 | 2,3 | 2,4 | 2,7 | 3 | 4 | 4,1 | 5,2 | 8,4 |

Given flows are at 7 barg pressure with reference to 20°C and 1 bar atmospheric air suction as per ISO7183.

# MNG SERIES PSA NITROGEN GENERATOR

## Technical Specifications

| Model | Free Nitrogen Delivery @ Following Purity Level ($m^3/h$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 95% | 97% | 98% | 99% | 99.50% | 99.90% | 99.95% | 99.99% | 99.999% | |
| MNG-10 | 2,7 | 2,2 | 1,9 | 1,5 | 1 | 0,8 | 0,7 | 0,5 | 0,2 | Modular |
| MNG-20 | 4,4 | 3,5 | 3,1 | 2,4 | 2 | 1,3 | 1,1 | 0,8 | 0,4 | |
| MNG-35 | 8,1 | 6,5 | 5,6 | 4,4 | 3,5 | 2,3 | 2,0 | 1,4 | 0,7 | |
| MNG-60 | 13,5 | 10,8 | 9,4 | 7,3 | 6 | 3,8 | 3,4 | 2,4 | 1,2 | |
| MNG-95 | 23,3 | 18,6 | 16,2 | 12,6 | 10,4 | 6,6 | 5,9 | 4,1 | 2,0 | Twin Tower |
| MNG-120 | 31,0 | 24,8 | 21,6 | 16,8 | 13,9 | 8,8 | 7,8 | 5,5 | 2,7 | |
| MNG-150 | 38,0 | 30,4 | 26,4 | 20,6 | 17,0 | 10,8 | 9,6 | 6,7 | 3,3 | |
| MNG-250 | 60,5 | 48,3 | 42,1 | 32,7 | 27,1 | 17,2 | 15,2 | 10,6 | 5,3 | |
| MNG-330 | 80,0 | 63,9 | 55,7 | 43,3 | 35,8 | 22,8 | 20,1 | 14,1 | 7,0 | |
| MNG-450 | 108,2 | 86,4 | 75,2 | 58,5 | 48,4 | 30,8 | 27,2 | 19,0 | 9,5 | |
| MNG-510 | 123,9 | 99,0 | 86,2 | 67,1 | 55,5 | 35,3 | 31,2 | 21,8 | 10,9 | |
| MNG-570 | 137,6 | 109,9 | 95,7 | 74,5 | 61,6 | 39,2 | 34,6 | 24,2 | 12,1 | |
| MNG-730 | 180,1 | 143,9 | 125,3 | 97,5 | 80,6 | 51,3 | 45,3 | 31,6 | 15,8 | |
| MNG-910 | 220,3 | 176,0 | 153,2 | 119,2 | 98,6 | 62,7 | 55,5 | 38,7 | 19,3 | |
| MNG-1110 | 267,8 | 214,0 | 186,3 | 145,0 | 119,9 | 76,2 | 67,4 | 47,0 | 23,5 | |
| MNG-1230 | 295,4 | 236,0 | 205,5 | 159,9 | 132,3 | 84,1 | 74,4 | 51,9 | 25,9 | |
| MNG-1370 | 327,4 | 261,5 | 227,7 | 177,2 | 146,6 | 93,2 | 82,4 | 57,5 | 28,7 | |
| MNG-1820 | 442,6 | 353,6 | 307,9 | 239,6 | 198,2 | 126,0 | 111,4 | 77,8 | 38,8 | |
| MNG-2050 | 516,2 | 412,4 | 359,0 | 279,4 | 231,1 | 146,9 | 130,0 | 90,7 | 45,3 | |
| MNG-2550 | 618,8 | 494,4 | 430,4 | 334,9 | 277,1 | 176,1 | 155,8 | 108,7 | 54,3 | |
| MNG-2950 | 763,2 | 609,8 | 530,9 | 413,1 | 341,8 | 217,2 | 192,1 | 134,1 | 67,0 | |
| MNG-3540 | 894,5 | 714,6 | 622,1 | 484,1 | 400,5 | 254,6 | 225,1 | 157,1 | 78,5 | |
| MNG-4160 | 1031,4 | 824,1 | 717,4 | 558,3 | 461,9 | 293,6 | 259,6 | 181,2 | 90,5 | |
| MNG-5560 | 1241,7 | 992,0 | 863,6 | 672,1 | 556,0 | 353,4 | 312,5 | 218,1 | 109,0 | |
| MNG-6050 | 1532,6 | 1224,5 | 1066,0 | 829,6 | 686,3 | 436,2 | 385,8 | 269,2 | 134,5 | |
| MNG-7500 | 1823,3 | 1456,7 | 1268,2 | 986,9 | 816,4 | 519,0 | 458,9 | 320,3 | 160,0 | |
| MNG-9170 | 2048,0 | 1636,1 | 1424,3 | 1108,4 | 917,0 | 582,9 | 515,5 | 359,7 | 179,7 | |
| MNG-11200 | 2501,2 | 1998,3 | 1740,0 | 1353,8 | 1120,0 | 712,0 | 629,6 | 439,4 | 219,4 | |

## Reference Conditions

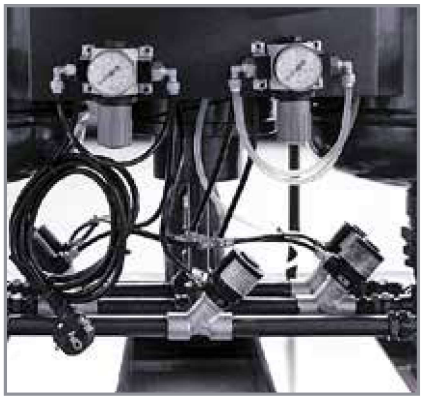
| Inlet Compressed Air Pressure | Outlet Nitrogen Pressure | Ambient Temperature | Inlet Air Dew Point | Purity |
|---|---|---|---|---|
| 7.5 bar | 6 bar | 25°C | ≤ 3°C | 99.5% |

# MNG SERIES PSA NITROGEN GENERATOR

## N2 NITROGEN

| Model | Buffer Tank Volume | Buffer Tank | Connections | | Dimensions (mm) | | |
|---|---|---|---|---|---|---|---|
| | | | Air Inlet | Nitrogen Outlet | Width | Length | Height |
| MNG-10 | 26 L | GELM-100 | 1/2" | 1/4" | 610 | 1500 | 1090 |
| MNG-20 | 35 L | GELM-100 | 1/2" | 1/4" | 675 | 1150 | 1308 |
| MNG-35 | 52 L | GELM-100 | 1/2" | 1/4" | 736 | 1179 | 1787 |
| MNG-60 | 70 L | GELM-100 | 1/2" | 1/4" | 932,5 | 1115,5 | 1485 |
| MNG-95 | 97 L | GELM-250 | 1" | 1/4" | 920 | 1090 | 1485 |
| MNG-120 | 126 L | GELM-300 | 1" | 1/4" | 1260 | 955 | 1450 |
| MNG-150 | 151 L | GELM-500 | 1" | 1/4" | 1230 | 954 | 1650 |
| MNG-250 | 280 L | ELM 150 | 1" | 1/4" | 1298 | 1256 | 1971 |
| MNG-330 | 408 L | ELM 150 | 1" | 1/4" | 1520 | 1477 | 2023 |
| MNG-450 | 464 L | ELM 150 | 1" | 1/4" | 1555 | 1423 | 2155 |
| MNG-510 | 515 L | ELM 300 | 1 1/2" | 1/4" | 1560 | 1582 | 2022 |
| MNG-570 | 573 L | ELM 300 | 1 1/2" | 1/4" | 1582 | 2208 | 2225 |
| MNG-730 | 712 L | ELM 300 | 1 1/2" | 3/4" | 1945 | 1812 | 2082 |
| MNG-910 | 1,042 $m^3$ | ELM 300 | 1 1/2" | 1" | 1945 | 1812 | 2477 |
| MNG-1110 | 1,290 $m^3$ | ELM 600 | 1 1/2" | 1" | 2010 | 1872 | 2525 |
| MNG-1230 | 1,402$m^3$ | ELM 600 | 2" | 1" | 2052 | 1909 | 2735 |
| MNG-1370 | 1,498 $m^3$ | ELM 600 | 2" | 1 1/4" | 2052 | 1903 | 2945 |
| MNG-1820 | 2,019 $m^3$ | ELM 600 | 2" | 1 1/2" | 1668 | 3599 | 2634 |
| MNG-2050 | 2,336 $m^3$ | ELM 800 | DN80 | 1 1/2" | 1841 | 3490 | 3120 |
| MNG-2550 | - | ELM 1200 | DN80 | 2" | 1920 | 2430 | 3185 |
| MNG-2950 | - | ELM 1200 | DN80 | 2" | 2070 | 2580 | 2630 |
| MNG-3540 | - | ELM 1600 | DN80 | 2" | 2120 | 2492 | 3055 |
| MNG-4160 | - | ELM 1600 | DN80 | 2" | 2176 | 2484 | 3375 |
| MNG-5560 | - | ELM 2100 | DN 100 | 2 1/2" | 2860 | 3490 | 3942 |
| MNG-6050 | - | ELM 2100 | DN100 | DN80 | 3260 | 3554 | 4145 |
| MNG-7500 | - | ELM-2750 | DN100 | DN80 | 3260 | 4164 | 4255 |
| MNG-9170 | - | ELM 4200 | DN 100 | DN80 | 3371 | 4746 | 4420 |
| MNG-11200 | - | ELM 4200 | DN 150 | DN100 | 3130 | 5091 | 4772 |

**Note:** Mikropor supplies buffer tank volumes for 99,0% and higher Nitrogen purities. For purities lower than 99,0%, it may be necessary to use an additional tank. (Buffer Tanks are standard for MNG 10 to MNG 2550)



### Correction Factor for MNG Series

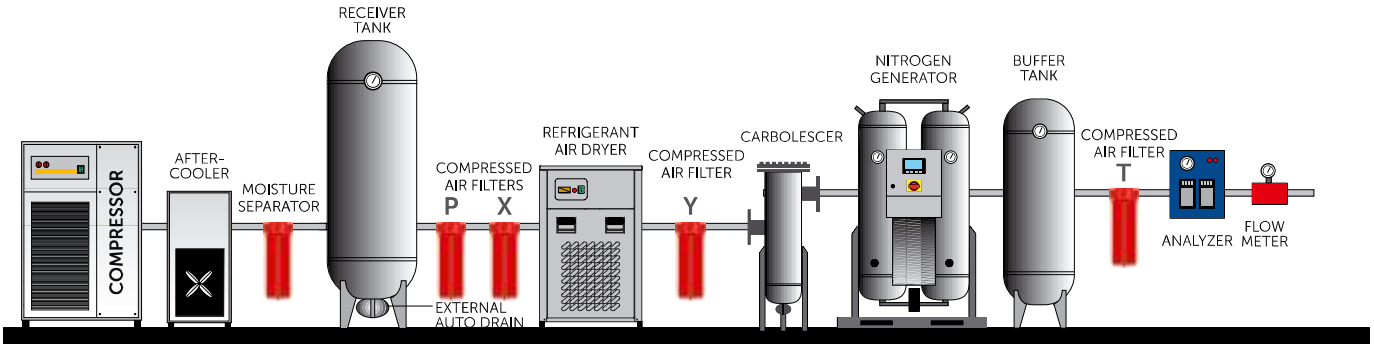
| Inlet Pressure (bar) | F1 | Ambient Temp. (°C) | F2 |
|---|---|---|---|
| 6 | 0,82 | 5 | 0,85 |
| 6,5 | 0,88 | 10 | 1 |
| 7 | 0,94 | 15 | 1 |
| 7,5 | 1 | 20 | 1 |
| 8 | 1,05 | 25 | 1 |
| 8,5 | 1,1 | 30 | 0,91 |
| 9 | 1,14 | 35 | 0,82 |
| 9,5 | 1,2 | 40 | 0,74 |
| 10 | 1,21 | 45 | 0,6 |

To determine the nitrogen generator model in the reference conditions divide the nitrogen flow rate to the factors mentioned above.

# MNG SERIES PSA NITROGEN GENERATOR

"Mikropor reserves the right to change the design and/or dimensions and/or weight of his products at any time without any notice or liability."

## AIR LINE DESIGN




## AIR LINE DESIGN