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NGX SOLUTIONS



Natural Gas Dryers for NGV Fueling Stations



Drying natural gas for today's NGV fueling stations

What you need to know...

ISO 15403:2000 – The single most important safety requirement

ISO 15403:2000 (E) standard states (paragraph 5.1): “The single most important safety requirement of compressed natural gas (CNG) fuel is a very low water dew point temperature to preclude the formation of liquid water at any time. Liquid water is the precursor to the formation of corrosive compounds through combination with components in natural gas, namely carbon dioxide and hydrogen sulphide. The combination of corrosive agents, and the pressure cycling, caused by fuel consumption and subsequent refilling of the fuel storage container, can result in crack growth in metals and ultimately damage and failure. Also, liquid water itself can be detrimental as it may cause blockages, both liquid and solid, in the fuel system.

Thus, the water dew point of the fuel gas at the fueling station outlet shall be sufficiently below the lowest ambient temperature in which the fueling station and vehicles will operate.”

If you think your gas is dry, you need to read this

As the effects of moisture in natural gas systems are not always immediately evident, some NGV station builders are reluctant to address the importance of installing desiccant dryer systems in CNG fuelling stations. This is despite the fact that there are industry standards and recommended practices for the required dew point of compressed natural gas used for fuelling stations, such as ISO 15403:2000(E).

The most common reason for not installing dryers in NGV stations is the belief that the gas is already dry. However, it should be taken into consideration that although the gas dew point may be as low as -40°C in the pipeline at pipe pressure, the effects of compression will affect the dew point of the gas.

Physical laws dictate that the dew point of a gas increases as its pressure increases. Therefore, although the dew point of the gas in a given pipeline may be very low when it reaches the compressor, it will be significantly higher when the gas leaves the compressor. This is why natural gas desiccant dryers are required in the majority of NGV stations in order to conform to the ISO 15403:2000(E) standard, specifically in areas where lower temperatures are encountered during the colder winter months.

Suction side versus high pressure discharge drying technology

Higher concentration of water vapor per volume of gas, caused by high compressor discharge temperatures, affects the adsorption efficiency of desiccant dryers which are installed on the pressure discharge side. Oil vapor found at the outlet of the oil-lubricated compressor can contaminate the desiccant and cause dew point collapse. Lower temperatures and oil vapor free gas on the suction side result in better dryer performance and lower maintenance cost.

Allowing “wet” gas to enter the compressor is undesirable, as most reciprocating compressors are extremely sensitive to liquid water entering the compression cylinders, which can have catastrophic results on the entire compressor.

Pressure swing dryers use 10 – 15% of the dry gas from their outlet to regenerate the off-line tower. This used gas must then be recovered on the suction side of the compressor, increasing its size and decreasing the output to the storage vessels and dispensers. This is not an economical solution as compared to the suction side dryer which does not utilize any purge gas.

Xebec – World leader in drying natural gas for vehicle fueling stations

- 25 years experience in designing and manufacturing gas dryers
- Complete dehydration and filtration solutions
- Proven engineered solutions for custom applications
- Major installations throughout the world: North America, China, Russia, Australia, South America, Indonesia and the Middle East
- Dedicated CNG team at every level of the process
- Worldwide support, service, replacement parts
- Built to ASME code and National Board certified
- Can be built to specific requirements such as the Chinese and Malaysian pressure vessel codes

Xebec offers treatment solutions for other gases

- Hydrogen
- Biogas
- Industrial gases
- Other natural gas applications



CRN



NGVAMERICA
Natural Gas Vehicles in America



STVNGX – Basic Single Tower Natural Gas Dryers

Features:

- Low cost, low capacity basic package
- External regeneration or desiccant replacement required
- AutoDew is a highly recommended option

Applications:

- Low to medium flows
- Low to high pressure design
- Recommended for low throughput (water content) fueling needs



Model No	Pipe Size	Inlet Gas Flow (approx) scfm (Nm ³ /hr)					
		10 psig (0.7 bar g)	50 psig (3.5 bar g)	100 psig (7 bar g)	145 psig (10 bar g)	232 psig (16 bar g)	363 psig (25 bar g)
STV6NGX	½" NPT	13 (22)	35 (57)	62 (100)	87 (140)	134 (216)	205 (330)
STV8NGX	1" NPT	30 (49)	79 (127)	140 (226)	196 (314)	302 (486)	462 (743)
STV10NGX	1" NPT	50 (81)	132 (212)	234 (376)	326 (524)	503 (809)	770 (1238)
STV14NGX	1½" NPT	84 (135)	220 (354)	390 (627)	543 (873)	839 (1349)	1283 (2063)
STV18NGX	1½" NPT	109 (176)	286 (460)	507 (815)	706 (1135)	1091 (1754)	1668 (2682)
STV20NGX	2" NPT	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STV24NGX-2	2" NPT	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STV24NGX-3	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STV30NGX-2	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STV30NGX-3	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STV36NGX-3	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STV36NGX-4	4" FLG	578 (929)	1515 (2435)	2686 (4317)	3740 (6011)	5780 (9290)	8850 (14224)

STRNGX – Regenerable Single Tower Natural Gas Dryers

Features:

- Comprehensive range of rugged, skid mounted single and dual tower regenerable natural gas dryers
- Closed loop, operator initiated heat reactivated regenerated cycles for reliable dryer regeneration control and shutdown
- AutoDew is a standard feature and will signal when regeneration is required

Applications:

- Medium to high flows
- Low to high pressure design
- Recommended for medium throughput fueling needs
- Minimum downtime (no downtime required for duplex model)



Also available: A duplex version has an additional drying tower to eliminate downtime when regeneration is necessary

Model No	Pipe Size	Inlet Gas Flow (approx) scfm (Nm ³ /hr)					
		10 psig (0.7 bar g)	50 psig (3.5 bar g)	100 psig (7 bar g)	145 psig (10 bar g)	232 psig (16 bar g)	363 psig (25 bar g)
STR18NGX-1.5 AutoDew	1½" FLG	109 (176)	286 (460)	507 (815)	706 (1135)	1091 (1754)	1668 (2682)
STR20NGX-2 AutoDew	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STR24NGX-2 AutoDew	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STR24NGX-3 AutoDew	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STR30NGX-2 AutoDew	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
STR30NGX-3 AutoDew	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STR36NGX-3 AutoDew	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
STR36NGX-4 AutoDew	4" FLG	578 (929)	1515 (2435)	2686 (4317)	3740 (6011)	5780 (9290)	8850 (14224)

DTRNGX – Regenerable Twin Tower Natural Gas Dryers

Features:

- Twin tower
- Economic simplified four-way valve design
- Compact design
- All models complete with regeneration package
- AutoDew as standard feature
- Limited in pressure and flow capacity
- Available in automatic and manual versions
- Integrated or remote control panel available

Applications:

- Low to medium flows
- Low to medium pressure design
- Recommended for medium throughput fueling needs
- No downtime



Model No	Pipe Size	Inlet Gas Flow (approx) scfm (Nm ³ /hr)					
		10 psig (0.7 bar g)	50 psig (3.5 bar g)	100 psig (7 bar g)	145 psig (10 bar g)	232 psig (16 bar g)	363 psig (25 bar g)
DTR14NGX-1.5	1½" FLG	109 (176)	286 (460)	507 (815)	706 (1135)	1091 (1754)	1668 (2682)
DTR14NGX-2	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
DTR18NGX-1.5	1½" FLG	109 (176)	286 (460)	507 (815)	706 (1135)	1091 (1754)	1668 (2682)
DTR18NGX-2	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
DTR24NGX-2	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
DTR24NGX-3	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
DTR30NGX-2	2" FLG	202 (324)	528 (849)	936 (1505)	1304 (2096)	2014 (3238)	3079 (4951)
DTR30NGX-3	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)

HRBNGX – Fully Automatic Heat Reactivated Twin Tower Natural Gas Dryers

Features:

- Designed and engineered for large flow and continuous duty cycles
- Fully automatic and maximized desiccant regeneration, dew point performance and energy efficiency
- Large LCD text display shows dryer status and alarms at all times
- Custom designed to meet all levels of specifications

Applications:

- Medium to high flows
- Low to high pressure design
- Recommended for medium to high throughput fueling needs
- No downtime



Model No	Pipe Size	Inlet Gas Flow (approx) scfm (Nm ³ /hr)					
		10 psig (0.7 bar g)	50 psig (3.5 bar g)	100 psig (7 bar g)	145 psig (10 bar g)	232 psig (16 bar g)	363 psig (25 bar g)
80HRBNGX	2" FLG	134 (216)	352 (566)	624 (1004)	869 (1397)	1343 (2159)	2053 (3300)
200HRBNGX	3" FLG	336 (540)	880 (1415)	1561 (2509)	2173 (3493)	3356 (5396)	5132 (8251)
300HRBNGX	4" FLG	504 (810)	1320 (2123)	2341 (3763)	3259 (5240)	5035 (8094)	7698 (12376)
400HRBNGX	4" FLG	672 (1081)	1761 (2831)	3121 (5018)	4346 (6987)	6713 (10793)	10264 (16502)
500HRBNGX	6" FLG	840 (1351)	2201 (3538)	3901 (6272)	5432 (8731)	8391 (13491)	12830 (20627)
600HRBNGX	6" FLG	1008 (1621)	2641 (4246)	4682 (7527)	6518 (10480)	10069 (16189)	15396 (24753)
750HRBNGX	8" FLG	1260 (2026)	3301 (5307)	5852 (9409)	8148 (13100)	12587 (20236)	19245 (30941)
1000HRBNGX	8" FLG	1680 (2701)	4401 (7076)	7803 (12545)	10864 (17466)	16782 (26982)	25660 (41254)



Xebec filtration solutions include:

- Air and gas filters
- Engineered flanged filters
- Water separators
- High pressure filters
- Stainless steel process filters
- Landfill and biogas filters
- Filter elements



Wide range of accessories available:

- Dew point sensors
- Desiccant
- Drains
- Valves
- Differential pressure switches
- Pressure gauges



Committed to first class customer service.

Call Toll-Free: 1-877-GO-XEBEC

Email: sales@xebecinc.com

Xebec stands behind the service, spare parts and technical support needed to ensure the most complete and effective solution for every installation throughout the world.

Gas treatment equipment is installed in hazardous locations. In order to maintain optimum performance, Xebec stresses the importance of performing regular maintenance.



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