

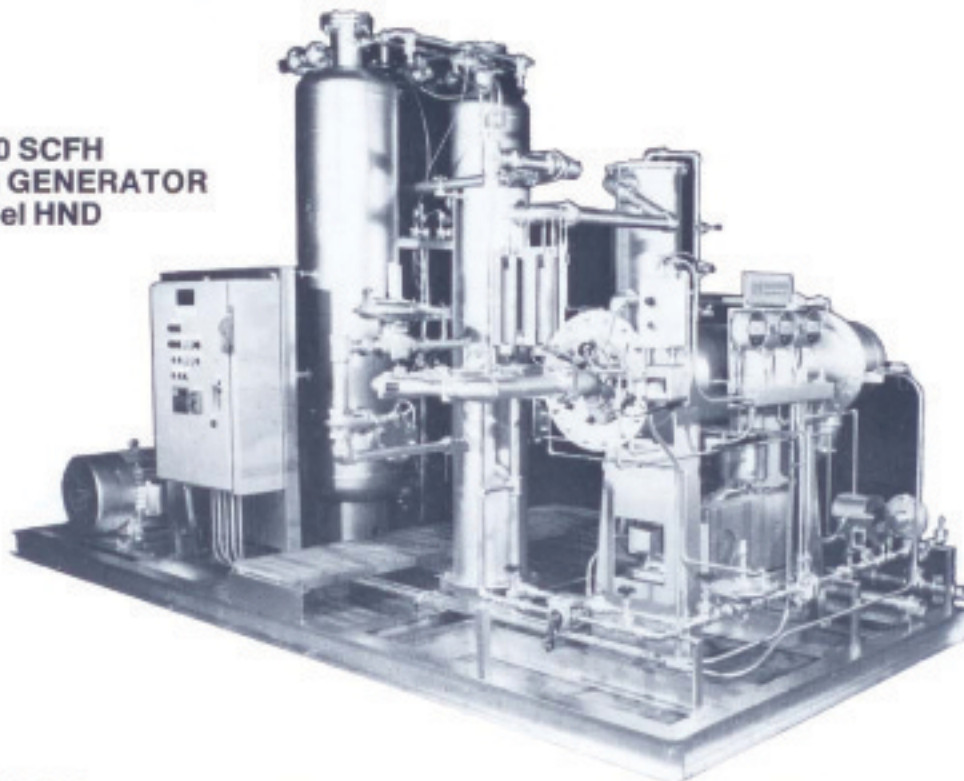
# NITROGEN ATMOSPHERE GENERATORS

Patent No. 3,498,025

MODEL - HND

**GAS ATMOSPHERES** originators of packaged concept in **GAS** generating systems . . .

**4,000 SCFH  
NITROGEN GENERATOR  
Model HND**



**GAS ATMOSPHERES** patented Model HND, Nitrogen Generators are uniquely practical in design, utilizing modern molecular sieve gas separation techniques, added to the many **GAS ATMOSPHERES** advances for automatic continuous system operation.

Product purity can be adjusted between 90% and 99+ % while dewpoint remains below  $-50^{\circ}\text{F}$ . Options are available which will raise the hydrogen content to 10% while reducing carbon monoxide to 0.2%. High pressure compressors are not required with our standard design.

The "PACKAGED" concept offers easy access to all components — designed with operators, as well as process in mind with SAFETY CONTROLS for automatic shutdown in event of utility failure.

**GAS ATMOSPHERES** provides efficient single source responsibility. ALL design, engineering & assembly accomplished within the **GAS ATMOSPHERES** plant, under direct supervision of experienced personnel.

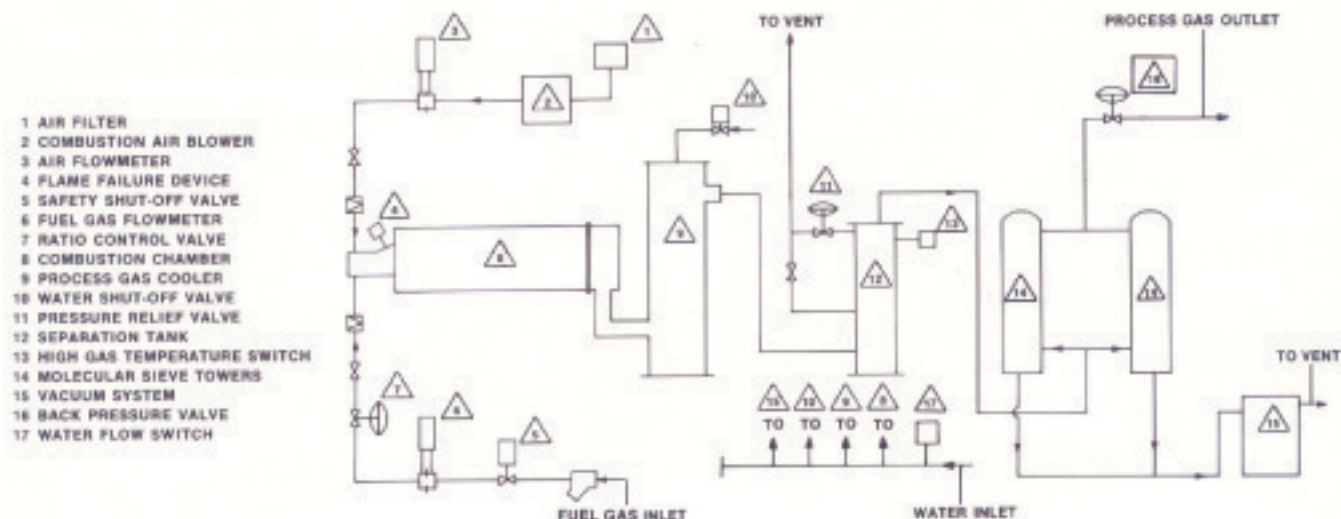
The flexibility of our MODEL HND generator is demonstrated by the fact it is used for nitrogen based carburizing, bright annealing of carbon steels, malleable iron and spheroidizing. In food packaging, the  $-50^{\circ}\text{F}$  ( $-45^{\circ}\text{C}$ ) dewpoint preserves crisp freshness in dry products, as crackers, nuts and cereals. In chemical plants, it is used for purging electrical panels and instruments, blanketing and backfilling tank trucks, containers, process lines and reactor vessels.

## **GAS ANALYSIS** (adjustable):

	<u>% by Volume</u>
Carbon Dioxide	0.1%
Carbon Monoxide	0.01 to 5.0%
Hydrogen	0.01 to 5.0%
Oxygen	0.2% to 0.01%
Methane	0.0% to 0.2%
Nitrogen	Balance
Delivered pressure	14" W.C.
Dewpoint	$-50^{\circ}\text{F}$

ANALYSIS depends on fuel used. OPTIONAL equipment available to improve gas purity.

## SCHEMATIC FLOW



## STANDARD SIZES

MODEL	CAPACITY SCFH	UTILITIES				DIMENSIONS			
		NAT. GAS CFH	POWER KWH	WATER GPM*	INST. AIR CFH**	LENGTH	WIDTH	HEIGHT	WEIGHT LBS.
HND-100	1000	160	21	20	5	13'-0"	6'-0"	8'-0"	8000
HND-200	2000	315	21	29	5	14'-0"	6'-0"	9'-3"	9530
HND-300	3000	450	32	40	5	15'-0"	7'-6"	9'-9"	12400
HND-400	4000	593	40	50	5	17'-6"	8'-8"	10'-3"	14100
HND-600	6000	890	48	74	10	18'-6"	9'-1"	11'-8"	17100
HND-800	8000	1190	62	98	10	19'-8"	9'-0"	11'-10"	20150
HND-1000	10000	1475	82	125	10	22'-0"	10'-6"	12'-8"	24000
HND-1200	12000	1770	83	148	10	25'-0"	11'-0"	13'-2"	26400
HND-1500	15000	2250	120	180	10	27'-0"	11'-0"	13'-11"	30600
HND-2000	20000	3000	161	240	15	28'-0"	11'-0"	13'-11"	33600

\*Cooling water based on 85°F. with 30°F. temperature rise.

\*\* Instrument air required at 60 psig minimum. Quantity approximate.

## AUXILIARY EQUIPMENT

- Carbon Dioxide, Oxygen & Combustibles Analyzers
- 3-Bed System for constant flow
- Local & Remote annunciators
- High pressure compressors
- Catalyst purifiers to reduce oxygen
- Heat Recovery — Steam or Hot water

**GAS ATMOSPHERES** also manufactures: CARBON DIOXIDE, INERT, ENDOTHERMIC, EXOTHERMIC, HYDROGEN generators, GAS PURIFIERS & DRYERS.

**gas ATMOSPHERES**

DIVISION  
OF

*Modern Equipment Company*