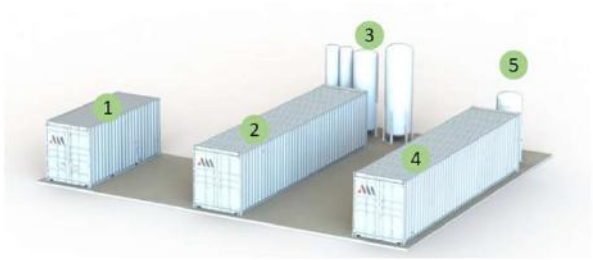
Independent Ammonia Making Machine™

Technical Specifications
Compact Ammonia Synthesis Package



Package Includes

- 2 full-size container + 1 half-size container configuration
- Control system with remote monitoring service (12-mo.)
- Installation, training, testing, and commissioning
- 12-mo. Warranty

Product Specification

Description	Specification	Units
Ammonia production rate	4 [4.4]	mt/d [US tons/day]
Ammonia pressure	21.7 [300]	bar [psi]
Ammonia purity	>99.9	wt. %
Water in Ammonia	<0.1	wt. %
Oil in Ammonia	<5	ppmw
Load capacity	30~100	%
Ramp rates	10	%/min
Power consumption	1740	kWh/mt
Container rating	IP45	
Site ambient temperature	-5~50 [23~122]	ºC [ºF]
Optional product certification	CE marked	Available upon request

Aspect	Standard
Material specifications	ASTM
Petroleum industry code	API
Pressure vessels	ASME VIII
Heat exchangers	TEMA, ASME, STD660
Pumps and compressors	ASME or API
Process piping	ASME
Instruments	API, ISA, ASME, EN, IEC, ISO, ANSI
Electrical code	IEC, IEEE
Safety valve	API
Hazardous area classification	API
Analysis	ASTM

Site Requirements

Description	Specification	Units
Hydrogen purity	99.999% (H_2O+O_2 < 10 ppmv)	
Hydrogen flow rate	330 [194]	Nm^3/h [scfm]
Hydrogen pressure, minimum	30 [435]	bar [psi]
Water pressure	3 [44]	bar [psi]
Water flow rate	19 [5]	liters/min [gpm]
Water temperature	10~32 [50~90]	ºC [ºF]
Concrete foundation area	232 [2500]	m^2 [ft^2]
Concrete foundation thickness	152 [6]	mm [in]

1. **Cooling Water System**
   - A closed-loop cooling water system provides chilled water to the synloop.

2. **Automation Control Room and Air Compressor System**
   - Control room houses the main electrical panels, PLC, and HMI.
   - A central air compressor provides clean, dry air to the nitrogen generator and control devices. A sound insulated partition separates it from the rest of the container.

3. **Nitrogen Generator, Receiver Tank, and Flare System**
   - Using Pressure Swing Adsorption (PSA), high purity nitrogen is generated from compressed air.
   - A receiver tank holds the compressed air that is used in the nitrogen generator.
   - A flare system safely burns effluent gases during depressurization and continuous venting.

4. **Synloop**
   - Green ammonia is produced using the Haber-Bosch process.
   - Equipment includes hydrogen and nitrogen compressors, mass flow controllers, electric start-up heater, heat exchangers, and liquid vapor separators.

5. **Reactor**
   - The reactor is a cold-wall, dual-bed design that incorporates AmmPower's proprietary technology.

Notable features:

- All containers are temperature controlled to maintain proper operating conditions.
- Containers that process hydrogen or ammonia have special safety features, including gas detectors and flame scanners.
- Modular design allows the layout to be easily reconfigured to match the client's location.
- Designed for compatibility with external hydrogen supply.

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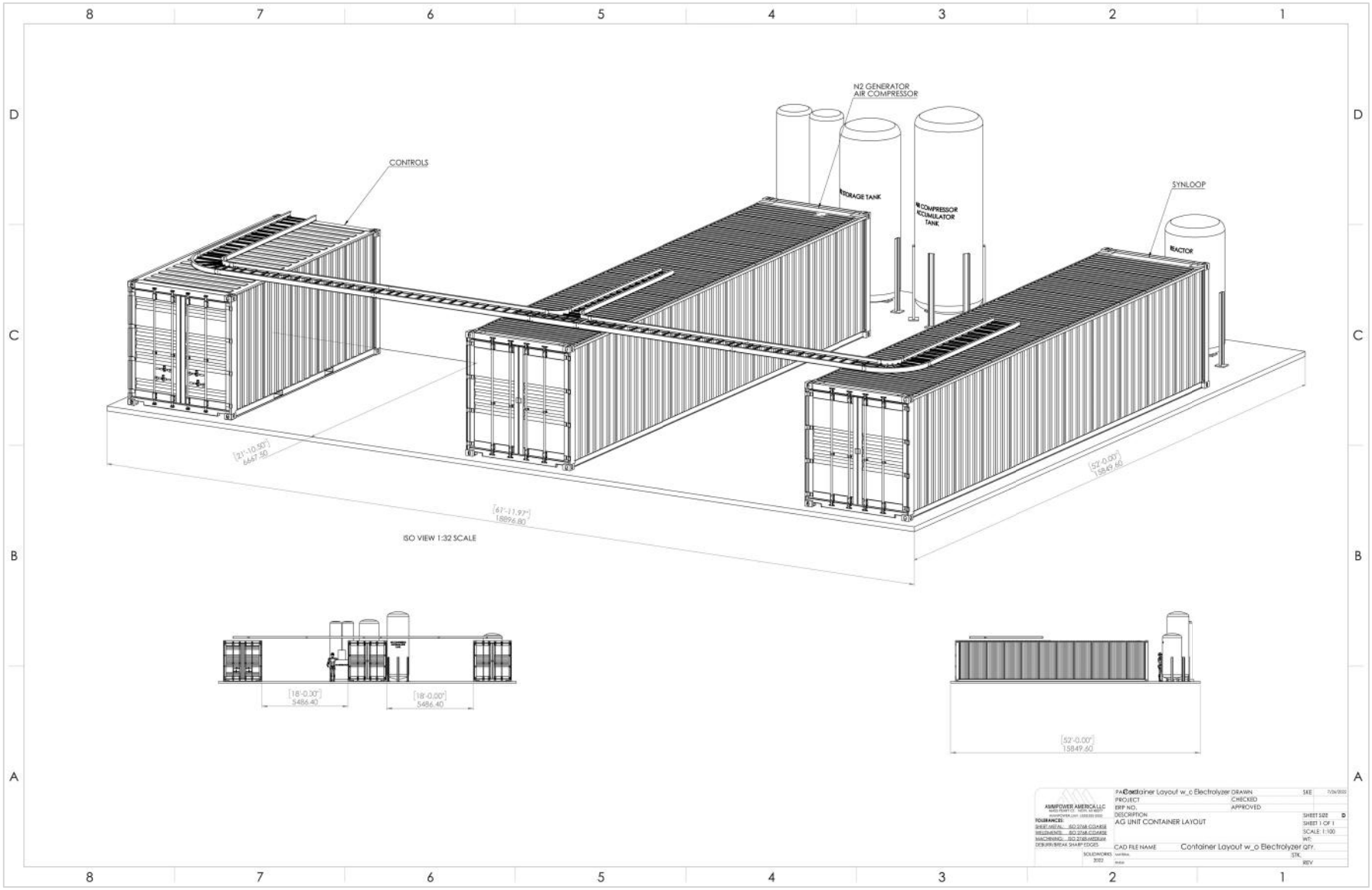
Example Container Layout
Complete Ammonia Synthesis Package



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