Solar® Turbines

A Caterpillar Company

Powering the Future Through Sustainable, Innovative Energy Solutions

LEAN MODULAR BUILDING

Configurable Modular Prefabricated Products

The lean modular building is a fully integrated solution providing many of the operational advantages of a turbine hall in a building that is half the typical size. Process and utility systems are packaged into configurable blocks which, when stacked on a suitable foundation, will form the complete modular compression or power generation solution. Solar modular solutions can competitively decrease project cost variances and schedule risks.

The basic structure consists of steel structural framework block modules with integral connectors. The roof is a girder and purlin structure system supporting roof panels. Roof and wall panels are sandwich type with mineral wool insulation, including insulation and flashing around all wall penetrations and between modules. A minimum of two personnel doors and one roll-up type equipment door is provided. The basic structure includes fascia, gutters, downspouts and other finishing hardware.

All features and systems noted arrive fully integrated and tested within the block modules, requiring only assembly and field interconnection.

Included Building Features:

- Forced draft building ventilation system for control by customer's supervisory system (optional by Solar)
- Pneumatically operated building ventilation exhaust louvers
- Fire and gas detectors, beacons and horns for connection to customer's supervisory system (optional by Solar)
- Ventilation motors and fire and gas components suitable for a Zone 1 hazardous area
- Electrical installation suitable for a Zone 2 hazardous area
- Cable and tray electrical and instrumentation installation, including trays for customer's site-installed power and control cables
- Manually operated overhead crane for regular equipment maintenance activities
- Emegency shut down button stations at each personnel door
- Low voltage interior lighting system with LED fixtures
- Low voltage external LED light fixtures above each personnel door

Integrated Utility Systems:

- Unit fuel gas conditioning equipment including:
  - Actuated vent valve
  - Pre-filter/separator
  - Electric fuel gas heater
- Unit seal gas conditioning equipment for compressor sets including:
  - Two x 100% coalescing filters
  - Electric seal gas heater
  - Manual purge valve
- Unit instrument air distribution piping and valves
- Vent header system to building exterior

Turbomachinery Integration:

- Interconnect piping and supports from unit utility systems to turbomachinery package
- Inlet and exhaust ducting systems supports
- Lube oil demister installation and piping
- Lube oil cooler isolation valves and piping
- Fuel gas meter and filter integration
- Drain isolation valves and piping to customer's building sump
- Controls integration of unit utility systems to turbomachinery control system

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Factory Testing/Quality Control Documentation:

- Point-to-point verification of electrical components
- Factory hydrotesting on applicable piping systems per ASME B31.3
- Factory pneumatic testing of seal gas system per ASME B31.3
- Customer observation on "non-interference" basis
- Standard quality documentation dossier

Miscellaneous:

Block modules and components are designed and preserved for conventional truck transportation. A detailed Project Assembly Guideline document (PAG) is supplied to aid in the assembly of the solution on site.

Standard Design Criteria (see table):

The building design meets Occupancy Category II per ASCE. Application of the product to differing site conditions can typically be validated without significant customization. Standard options and predefined custom features are available to accommodate most typical environments.

Standard Design Criteria

Outdoor Temp, °C (°F)	Maximum	43 (110)
	Minimum	-29 (-20)
Internal Temp, °C (°F)	Nominal[1]	5.6 (10) Above Ambient
	Minimum	10 (50) Heated
Relative Humidity	Maximum	95%
Elevation ASL, m (ft)	762 (2500)	
Atmosphere	Non-Corrosive Dry Environment	
Wind Velocity, kph (mph)	193 (120) Partially Enclosed	
Snow Loads, kPa (psf)	2.4 (50)	
Seismic Category	B (ASCE)	
Acoustic Performance[2]	85 dBa	

[1] Nominal is considered to be around the turbomachinery work area.
[2] Estimated average in a free field when measured 1 m (3 ft) from building or enclosed and 1.5 m (5 ft) above grade with the turbomachinery at full load. Higher attenuation levels available as an option.

Estimated Dimensions, Lean Modular Building

	Centaur® 40, Centaur® 50 Taurus™ 60	Taurus™ 70	Mars® 100, Titan™ 130	Titan™ 250
Length, m (ft)	16.2 (53)	18.3 (60)	21.3 (70)	25 (82)
Width, m (ft)	12.2 (40)	12.8 (42)	13.7 (45)	13.7 (45)
Height, m (ft)	10.7 (35)	10.7 (35)	10.7 (35)	10.7 (35)

Actual dimensions subject to final equipment configuration
Does not include external ancillaries or balance of plant

Additional Information:
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