NLine Energy, Inc. **Microsteam® Turbine** **275 kW**

Description

Type of prime mover	Number of prime mover units	Synchronous, Inverter or Induction	Type	Black-Start Capable	Qualification Status
Energent's Euler Turbine	1	Induction	CHP-Steam	No	Conditionally qualified

Performance

	PRV Data[1]					Steam Turbine				
	Up-stream Press Psig	Up-stream Temp °F	PRV Flow (lb/hr)	PRV Outlet Press Psig	PRV Outlet Temp °F	Electric Capacity	Net Electricity Output (kW)	Flow lb/hr	Outlet Temp °F	Steam Turbine Consumption[3] (lb/hr)
High Pres. Reducing Station	365	440	23,338	150	380	100%	274	24,610	366	1,272
			20,944			75%	205	21,920		976
			18,633			50%	137	19,310		677
Steam Loop PRV Station	150	353	10,936	15	308	100%	274	12,044	250	1,108
			9,062			75%	205	9,902		840
			7,433			50%	137	8,007		574
Steam Loop PRV Station	125	353	11,681	15	308	100%	274	12,825	250	1,144
			10,063			75%	205	10,935		872
			8,241			50%	137	8,840		599

Cooling water for lube oil cooling	10	gpm	Control air (80 to 125 psig)	4	scfm

[1]These systems are designed to operate in place of pressure reducing valves (PRVs) in steam systems, recovering much of the energy that is normally lost. Good practice is to keep PRVs in the system as a bypass during steam turbine maintenance. [2]Steam turbine performance varies by inlet and outlet conditions and throttle flow. These three performance points were chosen as representative of typical applications. [3]This flow represents the steam enthalpy used to generate the shaft power for electrical output that needs to be made up when replacing a PRV with a steam turbine generator. The data in the above table assumes all steam flow is through the steam turbine and no flow through the PRV.

Generator/Interconnection/Sound

Generator	Marathon Motor	Induction	480-3-60
Switchgear provided suitable for	☐ radial network ☐ secondary network ☐ spot network		
	☑ manual transition ☑ automatic transition		
System Noise Level at 30 feet	85 dBA untreated acoustically		

Vendor Information

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Vendor Statement

NLine Energy is an industry leading, US-based, full-service developer, integrator and financier delivering economical, turnkey, small and micro-scale power generation solutions, primarily less than 5 megawatts, helping our clients capture Every Drop of Energy™. NLine Energy is the ideal project partner to help New York entities unlock the unknown potential of their steam infrastructure. NLine Energy, as exclusive NY developer, helps clients analyze and define the opportunities provided by the Microsteam Turbine, as well as facilitate a successful design and integration to payback in two to four years. The Microsteam® Turbine is a revolutionary, patented and proven, 275-kW plug-and-play, non-condensing back pressure turbine system with over 25 installations helping hospitals, universities, commercial buildings and industrial manufacturing facilities save money by capturing wasted energy and generating ultra-efficient (>80%) onsite power. With its streamlined design and compact footprint, delivered fully plumbed and assembled, the Microsteam Turbine is ideal for any facility that reduces pressure of at least 10,000 lb/hr of saturated or superheated steam.

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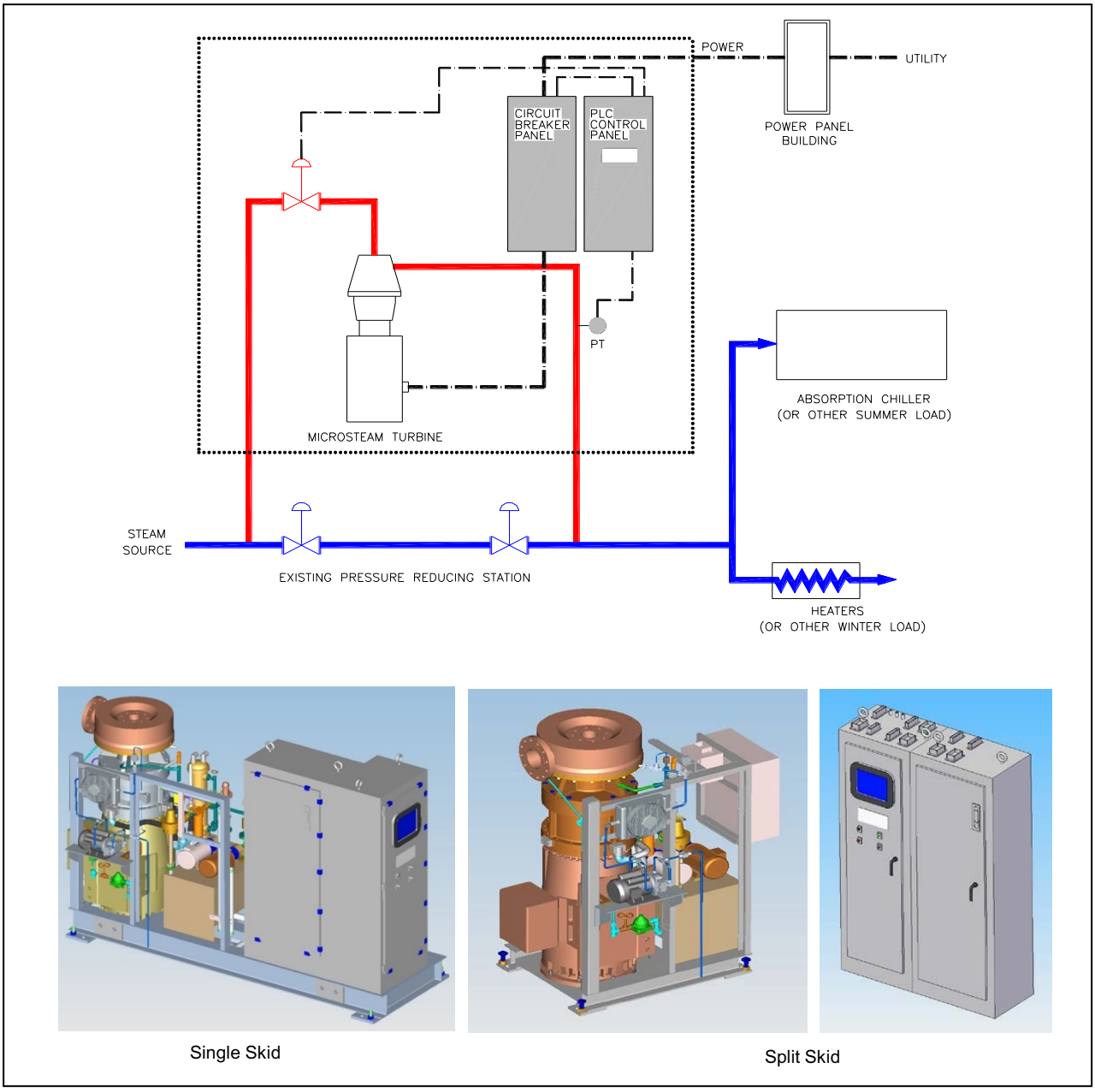
Footprint

	Width ft	Length ft	Height ft	Weight lbs
Core System in Single Skid*	9.4	16.3	10.1	7,300
Core System in Split Skid* (Turbine)	9.5	11.5	9.5	5,300
Core System in Split Skid* (Control/Breaker)	3.0	4.9	6	2,000
Largest part for delivery	3.5	5.5	6.5	5,300
Heaviest part for delivery	3.5	5.5	6.5	5,300

*Includes maintenance clearances.



Single Skid

Split Skid