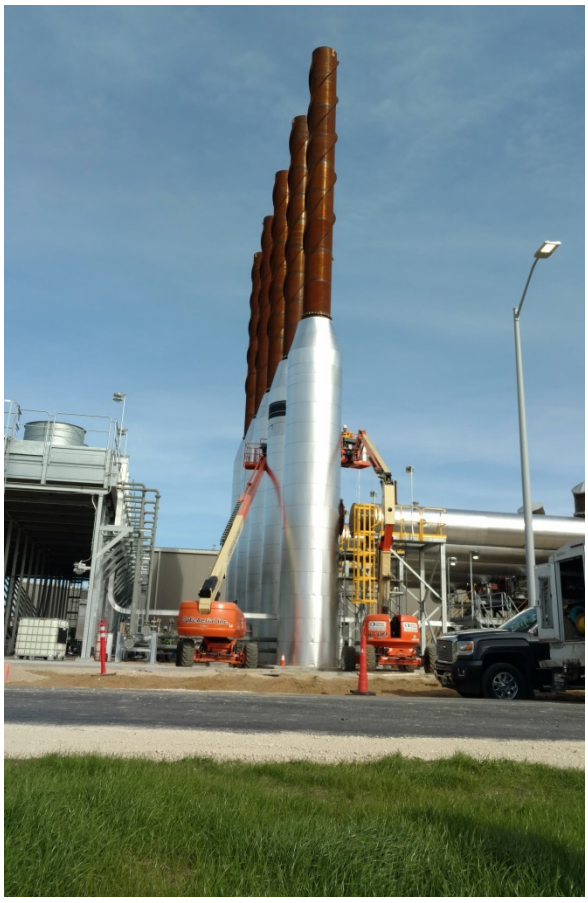
Westside Energy Station

Reciprocating Internal Combustion Engine (RICE) Engineering and Design—EPC

Client:	Rochester Public Utilities
Project Name:	Westside Energy Station
Location:	Rochester, Minnesota
RICE Supplier:	Wärtsilä
RICE Model:	20V34SG
RICE Size:	45-MW (5x9 MW)
Fuel:	Natural gas



Schedule Milestones:

Project Award	Start Construction	RICE Commercial Operation
March 2016	Q1 2017	Q2 2018

Description:

In March 2016, Rochester Public Utilities (RPU) awarded the Westside Energy Station (WES) engineering, procurement, and construction (EPC) to Westside Energy Partners (WEP), the project joint venture of Sargent & Lundy and the Boldt Company. The WES is a new natural gas-fired facility consisting of five 9-MW reciprocating internal combustion engines (RICE) in Rochester, Minnesota. Construction was completed two months ahead of schedule under a compressed timeline. The plant completes the replacement of RPU's 1949-vintage Silver Lake coal-fired plant, with increased efficiency and less carbon emissions.

As EPC contractor, WEP was responsible for the engineering, balance-of-plant (BOP) equipment and material procurement, construction, and commissioning of all works necessary for installation, including the mechanical, electrical, instrumentation and controls (I&C), and civil, structural, and architectural scopes.

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Details on the overall project include:

- **Development of Conceptual Design**. Sargent & Lundy worked closely with RPU to develop a conceptual design for the new RICE facility. As part of this work, site plot plans and general arrangement drawings were developed not only to locate the RICE units and BOP equipment on site, but also to consider several key items for the overall project. These items included material delivery, construction access, constructibility, noise, site cut-and-fill and access for operations and maintenance, and proximity to existing systems (natural gas, transmission and distribution, fire protection, utilities, etc.). During this phase of the project, the capital cost estimate, project schedule, and supporting functional drawings (piping and instrumentation diagrams [P&IDs], electrical single-lines, etc.) were also developed. Additionally, Sargent & Lundy supported the development of sustainable-energy options, including a photovoltaic solar array for a safe, efficient, and flexible facility.
- **Detailed Engineering, Design, and Procurement**. Sargent & Lundy performed the complete project management, administration, procurement, and detailed engineering and design services for BOP items. This included preparing and administering complete specification packages for BOP equipment. The major equipment–engines, auxiliaries, selective catalytic reduction system, and stack–was provided by Wärtsilä North America. Other major features in the design included sound attenuation provisions and sustainable energy considerations incorporated into the overall building design. Our detailed design covered mechanical/electrical process and BOP interconnects, civil works, transmission and distribution, and controls interface.
- **Construction Management and Commissioning**. WEP also provided construction and commissioning services for the project. Sargent & Lundy's site team of specialists provided mechanical, electrical, and instrumentation and controls (I&C) expertise to support the project startup/commissioning. Sargent & Lundy's commissioning team worked closely with Boldt to provide support through the precommissioning, commissioning, and integrated plant testing phases of the project to place the facility components, equipment, subsystems, and systems into an initial operating state.

Project-Unique Features:

- As the plant site was below the floodplain, construction teams drove over 900 gravel-filled pilings deep into the soil to create a stable foundation five feet above grade.
- The structure features a building envelope around the engine hall that reduces sound impact to the adjacent community.
- A 60-kW solar array adjacent to engine building provides renewable energy to the plant office.
- Construction was completed two months ahead of schedule.

Sargent & Lundy Contact:

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