



Sargent & Lundy Balance of Plant Engineer

June 27, 2019

Company Introduction and Power Experience



S&L Business Profile

- Founded 1891 in Chicago
- Privately held firm serving electric power and energy industries
- ISO 9001:2015 Certified Quality System
- ~2,000 staff members worldwide
- Routinely ranked as a top-tier engineering firm by publications such as *Engineering News-Record* and others



Markets We Serve

Power Generation



Fossil fuel, nuclear power, waste to energy plant designs including complete plant, buildings, roads and infrastructure

Full-scope design services.

Power Distribution



Power transmission and distribution, substations, lines, battery systems, backup power synchronous condensing, analytical services

Full-scope design services.

Environmental Services



Water and treating systems, air, emissions control systems, evaluations, studies, permitting & licensing applications, environmental modelling

Full-scope design services.

Energy & Industrial



Combined heat and power systems detailed design, balance of plant engineering, electrical systems analysis, FEED studies and capital estimates

Full-scope design services.

Consulting Services



Bankable feasibility studies, due diligence services, technical advisory specialists, expert witnessing, renewable resource studies, owner's engineering, remaining useful life studies

Financial sales or purchase support.

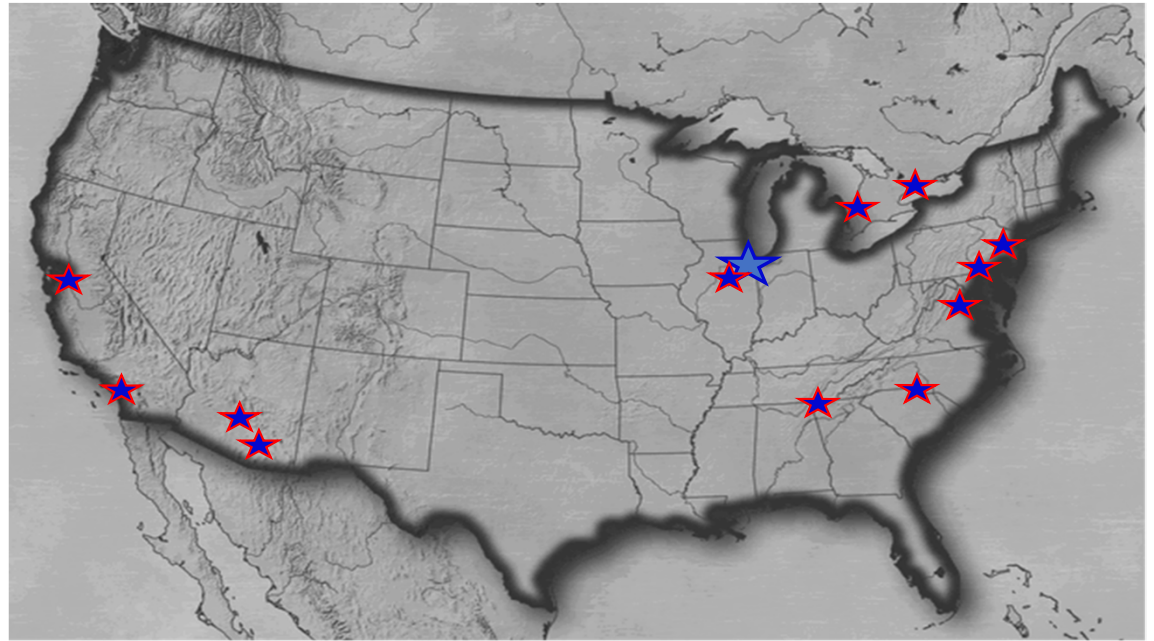
Office Locations

United States

- Chicago, IL – Headquarters
- Charlotte, NC
- Chattanooga, TN
- Phoenix and Tucson, AZ
- Warrenville, IL
- Wilmington, DE
- Elkridge, MD
- Hamilton, NJ
- Walnut Creek and Pomona, CA

International

- Baroda, India
- Abu Dhabi, United Arab Emirates
- Al Khobar, Saudi Arabia
- Whitby, Ontario, Canada
- Kincardine, Ontario, Canada



Power Generation Market

- Since 1891, company history includes many power generation industry firsts
- Capability to provide full power plant and cogeneration design services
- Offers a full range of engineering and advisory services for all aspects of fossil, nuclear, solar, wind, waste-to-energy and associated BOP systems
- Design record of nearly 1,000 power plants, totaling 140,667 MW for clients in public and private sectors worldwide



Power Generation – Selected Milestones

Notable Firsts & Milestones

- 1959: 1st Utility CC in United States
 - 38 MW Rios Pecos Power Plant, TX
- 1963: Designed World's Largest CC
 - 235-MW Horseshoe Lake, OK
- 1998: Designed 1st “G” class CC
 - 700-MW Magic Valley, TX
- 2006: Pennwell Project of the Year
 - 555-MW + 275-MW Santan Expansion, AZ
- 2014: Designed World's Largest CC
 - 4,000 MW Qurayyah IPP, Saudi Arabia
- 2017: Petra Nova Post-Combustion Carbon Capture
 - 250 MW Slip Stream – Largest Application on Coal-Fired Boiler

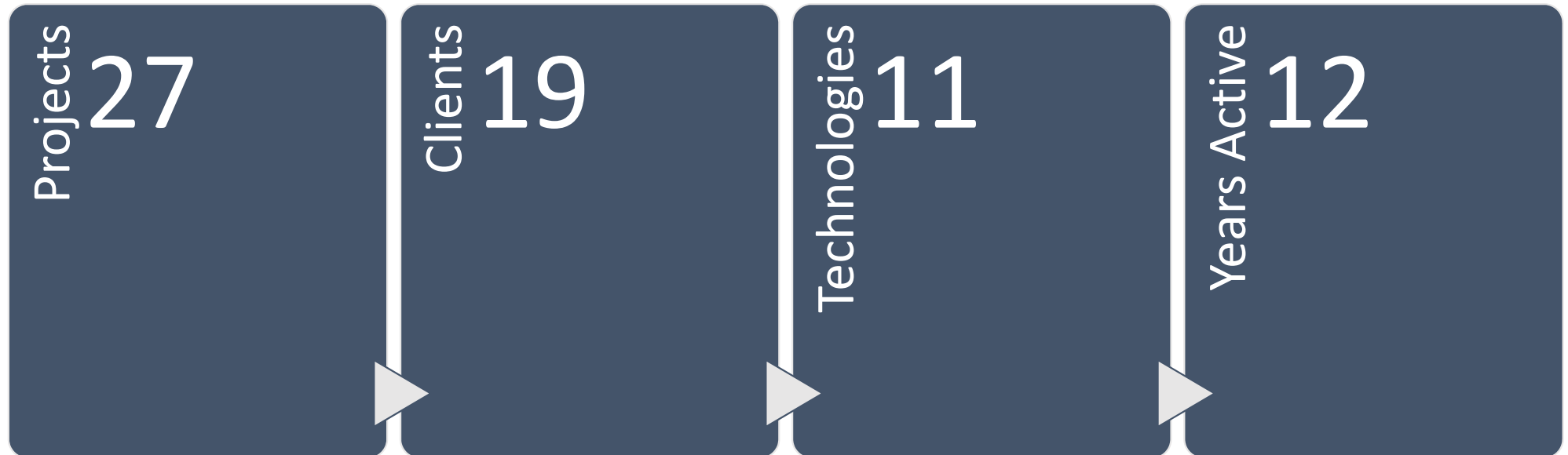


Carbon Capture and Utilization Experience



S&L CO₂ Capture Experience

S&L's Experience is Leading the Industry



S&L CO₂ Capture Projects

Current/Ongoing Projects



[ION Carbon Capture Design & Costing Study \(2018-Present\)](#)

As a subcontractor to ION Engineering, S&L is supporting the development of a carbon capture design and costing study for a 300- MW carbon capture system. S&L's role on the project includes performing studies, BOP engineering and design, and estimating.



[CCM X-Prize Competition \(2018-Present\)](#)

As a subcontractor to Carbon Capture Machine, S&L is supporting the design of a pilot skid carbon capture system to be installed at the Wyoming ITC. S&L's role on the project includes equipment design, BOP engineering and design, and construction oversight.

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[Oxy-Combustion & Carbon Capture Study \(2018-Present\)](#)

S&L is supporting a study to evaluate the conversion of an existing coal-fired unit to oxy-combustion in conjunction with installing a CO₂ capture system.

[Carbon Capture Test Skid Design \(2018-Present\)](#)

S&L is providing Owner's Engineering for the design of a test skid for a new carbon capture technology. The skid will be installed at various industrial applications.



S&L CO₂ Capture Projects

Previous/Completed Projects



[Petra Nova CO₂ Capture Project](#)
(2009 – 2017)

S&L supported this DOE-funded project from its conception. Supporting multiple FEED studies, providing Owner's Engineering services for the design and installation of the system, and providing general technical support throughout the commissioning and startup.



[Wyoming Integrated Test Center](#)
(2015 – 2018)

S&L completed preliminary and detailed engineering for the ITC installed at Basin's Dry Fork Station. S&L also provided technical support and oversight of the construction, commissioning and startup. The facility has 6 test sites that can be used for demonstrating technologies.

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[Carbon Capture Studies for Enhanced Oil Recovery](#)
(2016 – 2018)

S&L has performed multiple studies for various confidential clients, assisting in evaluating the feasibility and economics of integrating CO₂ capture technologies at existing plants for use in Enhanced Oil Recovery. For these projects, S&L evaluated the technical feasibility of integrating various configurations of CO₂ capture technology within the limitations of the existing station, and performed BOP engineering and costing.



Thank You

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