



# *International Power Technology*

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## **SINGLE DIGIT NO<sub>x</sub> and CO ACHIEVED with CHENG LOW NO<sub>x</sub> ( CLN<sup>®</sup>)**

**SAN JOSE, California – September 1, 2006** – International Power Technology (IPT) announced today that it has achieved 9 ppm NO<sub>x</sub> and CO at full turbine firing temperature and 2.35 steam-to-fuel (s/f) ratio at its Allison 501 CLN<sup>®</sup> demonstration cogeneration site located in Menlo Park, California. The SRI CLN<sup>®</sup> demonstration site has been operational since February 2005 and is continuing to demonstrate the viability and benefits of the CLN<sup>®</sup> technology. Ultra-low NO<sub>x</sub> and CO, lower operational costs, lower turbine heat rates, and extended turbine hardware and overhaul lifetimes are among the benefits being demonstrated at the SRI CLN<sup>®</sup> site.

The Cheng Low NO<sub>x</sub> (CLN<sup>®</sup>) technology uses saturated steam mixed with fuel to produce ultra-low emissions. The steam is mixed with the fuel to a very high level of homogeneity in hardware that is off-engine and compact. Standard OEM combustion liners and fuel nozzles can be used in applications requiring not less than 20 ppm NO<sub>x</sub> and CO. Specially designed IPT fuel nozzles are substituted for OEM nozzles in applications where less than 20 ppm NO<sub>x</sub> and CO are needed. The SRI plant is permitted for 25 ppm NO<sub>x</sub> which can be achieved at low s/f ratios and therefore stock OEM Low Btu nozzles are used.

IPT retrofitted its SRI CHP Allison 501-KH “Cheng Cycle” gas turbine with the CLN<sup>®</sup> technology in February 2005 in a move to get off water injection, decrease overall plant fuel consumption, and increase combustion liner lifetime. According to IPT, steam is easier on combustion liners as opposed to water and significantly increases the lifetime of these hot section parts. In addition to increased combustion liner lifetimes there is a significant savings on turbine fuel consumption (6%) due to an improved turbine heat rate on steam, says Randy Turley, IPT’s President. This is

because the water does not need to be vaporized in the engine which requires less fuel. Since the retrofit has been completed the technology has proven to live up to all its expectations.

Candidates for a retrofit to the CLN<sup>®</sup> technology include:

- 1) Existing 501 LE4-DLE customers with engines experiencing DLE problems such as high heat rates, carbon blasting, premature failure of combustion liners, and cracked outer combustion cases,
- 2) Customers seeking to get off water injection,
- 3) Customers needing to reduce NOx and CO for regulatory reasons,
- 4) Customers wanting to voluntarily reduce NOx and CO emissions to sell the offsets on the open market, and
- 5) New source review (NSR) requirements requiring ultra-low NOx and CO.

to a 1986 Development and Management Agreement. SRI International is a nonprofit public benefit 501(c)3 corporation organized in 1946 for the purpose of scientific research. SRI conducts contract research and development for public and private organizations throughout the world. SRI employs approximately 1,400 people worldwide, including 1,200 people at its 63-acre campus in Menlo Park, California and has yearly revenues in excess of \$200 million.

IPT was formed in 1974 to develop gas turbine steam injection technology. In 1984 IPT co-developed with Detroit Diesel Allison the Allison 501-KH "Cheng Cycle" gas turbine and has authored over 48 U.S. and international patents. Headquartered in San Jose, California, IPT's primary business today is O&M of power plants, engineering, field service, and combustion research.