INVENTIONS & INNOVATION

Success Story

SIDTEC CONDENSER MAINTENANCE PROGRAM

This New and Revolutionary Condenser Tube Cleaning Technology Removes both Soft and Hard Deposits

With assistance from DOE's Inventions and Innovation Program, Superior I.D. Tube Cleaners (SIDTEC) Inc. invented the SIDTEC mechanical on-line condenser maintenance service program for thermal power plants. In power plants that use surface water to cool condensers, waterborne debris and microorganisms accumulate on strainers and pipes, reducing water flow and the condenser's heat transfer ability. Condensers must be cleaned regularly to maintain system efficiency and to keep the power plant operating.

Benefits

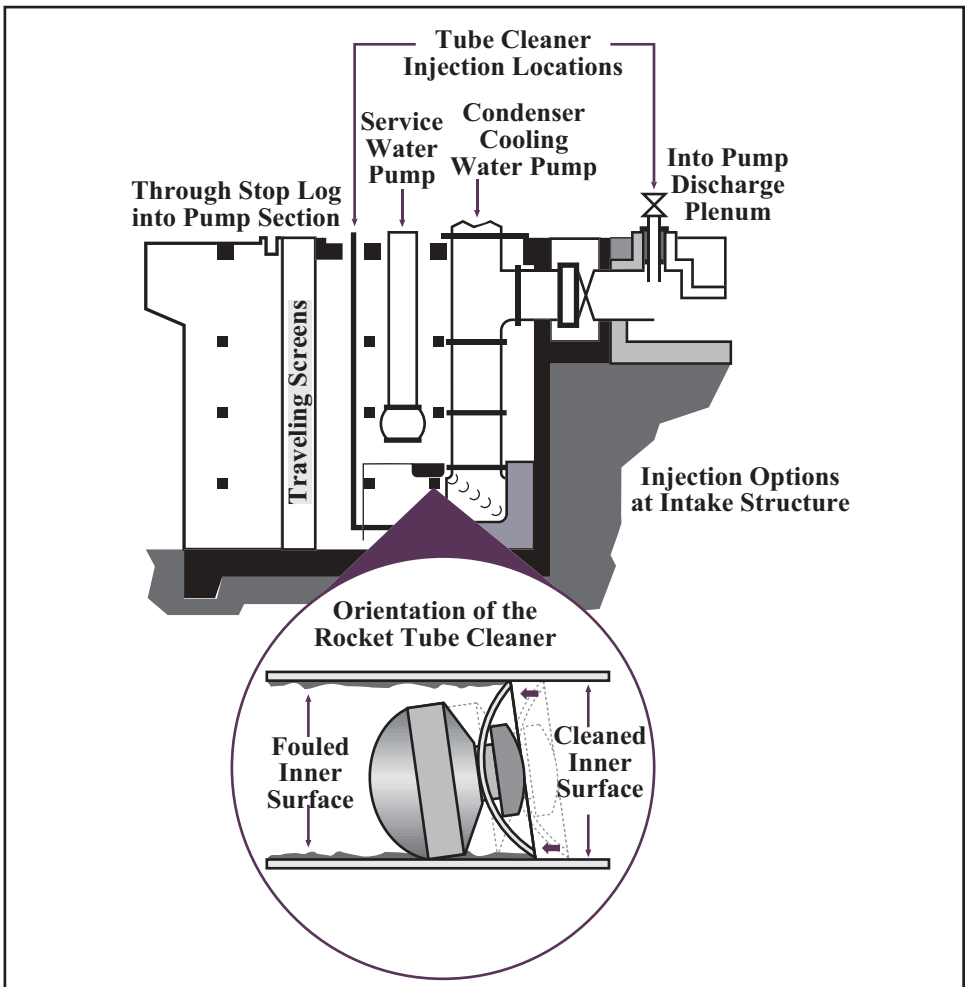
- Potential savings for one 500-MW plant are $250,000 annually
- Rocket tube cleaners do not impact circulating water pump performance
- Reduces the accumulation of bacterial slime, mud, dirt, and silt on heat transfer surfaces without the use of biocides such as chlorine and bromine.

Applications

Maintaining waterside tube cleanliness in the main steam condenser in thermal power plants.

Capabilities

- Mechanically removes condenser tube deposits using proprietary, ultra-high molecular weight polyethylene Rocket tube cleaners.
- Near-neutral buoyancy provides even distribution through all condenser tubes.
- Design handles both soft and hard deposits using nonabrasive or abrasive cleaning elements.
- Skimming recovery systems have greater than 99.95% efficiency and require no downtime for skimming system installation.
- Three equipment designs are available for rocket collection.
- Skimming outfall, straining discharges or in-line collection grates systems are available depending on plant design and access.



On-Line Condenser Tube Cleaner in Action

Technology Description

The SIDTEC program incorporates a two-part tube cleaner and a recovery system. The cleaning elements, or Rockets, are injected into the condenser cooling water system, conveyed through the condenser tubes with the normal flow of water, and recovered in the discharge. The cleaning element contacts the tube surfaces, wiping away mud, silt, and biofouling deposits. Near-neutral buoyancy ensures even distribution throughout all condenser tubes.
The product replaces conventional cleaning systems, such as automatic tube-cleaning systems or sponge balls; chemicals used to clean the condensers; and off-line mechanical tube-cleaning, which is costly in manpower and lost generation while the unit is off-line.

System Economics and Market Potential

- There are nine SIDTEC units in use at nine separate locations across the United states as part of long term service contracts. The program is still undergoing further development to make it more broadly applicable.
- The system can be offered as a service intermittently or as part of a long term service contract.
- One particularly intriguing aspect of this mechanical tube cleaning technology is that every single application on a once through cooling system has minimized or partially eliminated the use of chlorine and other biocides, which are normally used to control microbiological growth in the condenser (heat exchanger).
- The reduction of chlorine bleach use, generally amounting to multiple tank trucks per week, represents a significant environmental benefit for the SIDTEC process, one which will become increasingly important in the face of new environmental initiatives.
- A paper on the topic of chlorine elimination using SIDTEC was presented at the International Water Conference in Pittsburgh, October 2000.

Inventions and Innovation Program

The Inventions and Innovation Program provides financial assistance for establishing technical performance and conducting early development of innovative ideas and inventions. Ideas that have a significant energy-savings impact and future commercial market potential are chosen for financial support through a competitive solicitation process. Inventions funded by the program have saved enough energy to light 10 million homes per year. In addition, the program offers technical guidance and commercialization support to successful applicants. Ideas that benefit the Industries of the Future, designated by the Office of Industrial Technologies as the most energy-intensive industries in the United States, are especially encouraged.

The Inventions and Innovation grant allowed BetzDearborn to develop a condenser tube cleaning process that exhibits superior performance when compared with other competing methods"

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