

NAWTEC13-3144*NAWTEC 13 Speaker Abstract***HTI's Novel Deposit Removal Technology:
Impulse Deposit Removal System**

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Heat Technologies, Inc. develops thermal systems based on the most advanced thermal techniques: pulsating heating and combustion, infrared heating, staged combustion, combined combustion, etc.. HTI is involved in the design and manufacturing of a new generation of equipment that deploy these techniques for various commercial and industrial processes. The utilization of aforementioned methods allows us to create compact, cost efficient, low in maintenance, and simple in operation equipment.

One of the examples of such equipment is a fully automated Impulse Deposit Removal System designed and built by HTI for removal of deposits formed on heat transfer surfaces of boilers. The design of the unit is based on combined combustion technology that involves several fully controllable combustion methods, such as deflagrative, pulse and detonative combustion.

The IDRS consists of 3 major parts: the Impulse Generator, a PLC based control panel and a safety system. The Impulse Generator is whether introduced inside a boiler via nozzle or attached to its sidewall. When the operating cycle begins, it generates large amplitude high velocity pressure waves that are directed onto deposits via a custom designed nozzle. The IDRS can be installed as a stationary system and operate in programmable unattended mode to prevent formation of deposits, or it could be installed on a movable support and be moved from one location to another.

The operating cycle starts and finishes with a short purge period to eliminate any unburned combustible mixture to be left. There is a controllable quantity of pulses per cycle. Frequency of operating cycles per hour depends on type of deposits, frequency of its formation, etc. Having continuous control over the rates of combustion reactants as well as ignition, the system can control generated pressure and vary it, depending on the types of deposits. Once mode of operation is established, the operation is conducted automatically and controlled by a PLC. The IDRS can be rotated bi-axially via drives and, thus, can cover large area to be cleaned in several directions.

Gene Plavnik works for Heat Technologies, Inc., a Georgia based corporation that was created to provide industry with innovative thermal solutions. The company provides research, development, and manufacturing of advanced heat and mass transfer equipment custom designed to meet specifics of a particular application.