

**PYROCLEANING FURNACE AND THERMAL OXIDIZER SYSTEM**

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**ABSTRACT**

A Pyrocleaning Furnace and Thermal Oxidizer System which degreases metal components and comprises an oven, an oxidizer, a system gas supply means, a system gas exhaust means, and a first heat exchanger. The degreasing is accomplished by first transporting the metal components through the oven and exposing the oil coated metal components to hot gases which have a temperature above the vaporization point of the oil, but not one that is exceedingly high thereby also preventing the thickening of the oxide layer of the metal components. The hot gases are introduced into oven by way of the system gas supply means and do not include products of combustion (indirect heating). Since the gases are at a temperature above the vaporization point of the oil, upon contact with the metal components, the gases cause the oil to evaporate from the metal components. The resultant hydrocarbon-filled surrounding gases are then quickly evacuated from the oven and transported to the oxidizer. In the oxidizer, the hydrocarbon-filled gases are exposed to a burner which catalyzes the oxidation process. Thus, the hydrocarbons in the gases are burned and chemically altered resulting in an output gas which includes minimal hydrocarbons or other environmentally harmful gases. After exiting from the oxidizer, the hydrocarbon-less gases are safely discharged into the atmosphere by way of the system gas exhaust means. The oven also includes at least one low and at least one high pressure gas supply means which together serve as the heating source for the oven. The high pressure gas supply means also acts to increase the evaporation rate of the oil, and thereby decrease the resident heating time of the metal components, by impinging and creating a fluttering action on the metal components. A second heat exchanger, in addition to the first heat exchanger, provides efficiency to the system.

24 claims, 6 Drawing Sheets

