

### ABSTRACT

System and apparatus for the controlled intermixing of hydrogen/oxygen gasses with non-combustible gasses to reduce the burning temperature and velocity of the hydrogen gas in a burner. The system utilizes a hydrogen generator for developing the hydrogen/oxygen gasses. The hydrogen gas with non-combustible gasses are intermixed in a controlled air intake chamber. The exhaust gasses of the burner are returned as the non-combustible gasses to the mixing chamber in a closed loop arrangement. Upon attaining the proper burning temperature and velocity of the hydrogen gas the ratio of hydrogen/oxygen and non-combustible gasses is maintained. To effect a practical utilization, the generation of the hydrogen/oxygen gasses are controlled in start-up and in quantity. The control of the generation of gasses is effected by one or more variable parameters; such as varying the voltage applied to the plates, varying the pulse rate of the voltage on the plates, varying the spacing between the plates, switching the number of plates, and plate configuration. The hydrogen/oxygen generation is on demand; that is the hydrogen/oxygen generation on start-up is only on demand and thereafter generation is controlled in quantity by the need much in the same manner as an accelerator.