

**Eclipse Product:** InciniFume Duct Burners

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**Application:** Supplementary Firing on Cogeneration Application

**Description:** Government policy in Spain and Portugal encourages the use of supplementary firing in small cogeneration plants to simultaneously generate both electricity and useful heat to improve energy efficiency. The Eclipse InciniFume duct burner was designed specifically for supplementary firing in cogeneration applications. The burner can be located directly in the exhaust gases between the turbine and waste heat recuperator, taking the oxygen requirement from the turbine exhaust gases.

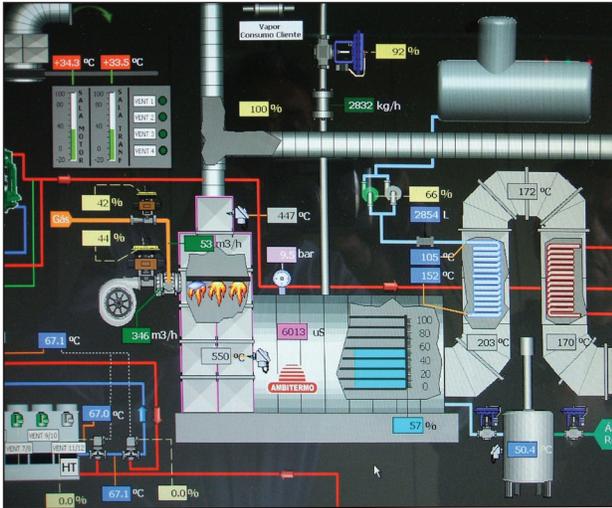
Ambitermo is one of the largest thermal engineering and environmental solutions firms in Portugal. The company is dedicated to the development and production of energy recovery boilers and systems. In February of 2010, Eclipse Spain received an order from Ambitermo for an InciniFume burner system to be added to an engine exhaust gas stream at a new cogeneration plant for a food manufacturer located in Portugal. The InciniFume, with 1MW input and 10kW permanent pilot, was delivered in June of 2010. Ambitermo installed the InciniFume using Eclipse drawings and schematics. When the installation was finalized, Eclipse supported the start-up. During the testing of the InciniFume, the results exceeded expectations. It was determined that the InciniFume burner with its partial premix was a better solution than boxed air heating burners, because the box can be deformed due to temperature changes and because the fresh air added is minimized.



InciniFume mounted horizontally in cogeneration system.

Six months after installation, the burner was working properly on gases with low oxygen content of 10% O<sub>2</sub> at a temperature of 830°F. Steam production of the system was 1.7Tn/hr, with exhaust gases at 3.0Tn/hr, aiding the supplementary firing. The InciniFume burner can reach outputs up to 10MW on engine exhaust and up to 40MW on turbine exhaust gases.

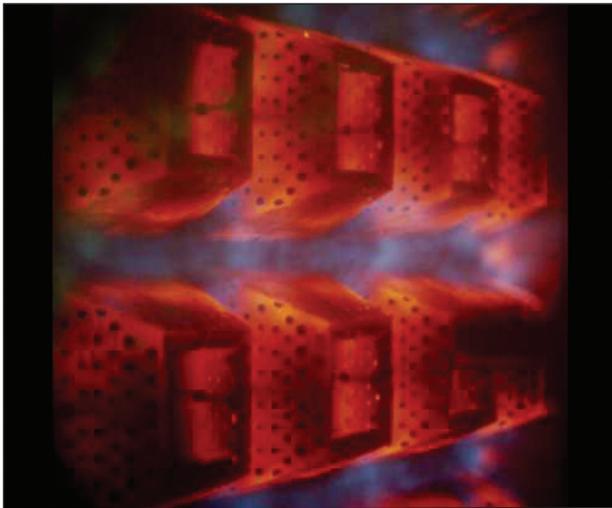
Ambitermo's senior commissioning engineer, Mr. Castro, said "the flame is short and very stable, the temperature distribution of the afterburner is excellent, and it promises to deliver high efficiency and a long life for our recovering boiler. Additionally, the burner is not increasing the oxygen in the stack. It is reducing oxygen and reaching efficiencies over 90% throughout the whole range of turndown. The permanent pilot and stand-by method, plus the low minimum input of this burner are excellent for control."



System control screen with InciniFume at left center.



Close-up view of the InciniFume burner installation.



InciniFume flame distribution across the duct.



Gas train and burner controls supplied by Eclipse.