



PLANT AND MACHINERY

From ultra low NO<sub>x</sub> burners, smokeless flares to the recuperative thermal oxidisers, Itas offers a real mix of advanced technologies that unite ethical values with productive efficiency and technical/economic advantages for the end user's benefit.



## PRIMARY AIMS: ENVIRONMENTAL PROTECTION AND SAFETY

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The R&D capability is the driver of those companies that want to keep ahead with the times even better by anticipating the technological needs of the manufacturing world, in terms of greater efficiency, high performance, minimum environmental emissions and safety. ITAS is in line with the vision has an R&D facility that is constantly searching for innovative components for the plants it designs and manufactures. The development of prototypes starts with 3D computerized design, thermo-graphic images and fluid dynamic simulations to reach a concrete and satisfactory result with the actual operating test. By 2020 the energy needs of the world will double while all countries especially those of the European Union have undertaken to reduce emissions. With this in mind ITAS is studying the feasibility to create burners that use fuels with a percentage of bio fuel. Other studies and research will be used to reduce noise and steam consumption in the smokeless flares while retaining high efficiency and reducing the costs of supply and maintenance. To complete the picture ITAS has a test area for burners and combustion equipment and testing new products and apparatus customized for end users.

**ENGINEERING**

Itas operates out of 4 Divisions (Chemical and Petrochemical, Ecology, Combustion Systems)—which use proprietary high technology burners for

applications in the converting, packaging, paper, textile and ceramic sectors—and Automation, which designs and supplies electrical control panels, control systems (PC, PLC, DCS). The aim of the company is to realize plants that satisfy the end-user, with respect to timing and to meeting the toughest Italian and international legislation. ITAS design engineers can develop projects using international software for structural calculations, stress analysis, pressure vessel calculations according to the specific codes of various countries, the most common being PED, radiation calculations, fumes dispersion and HAZOP risks.

**CHEMICAL AND PETROCHEMICAL TECHNOLOGIES**

The Chemical and Petrochemical division studies and realises flow systems of all types, including molecular sieves, dynamic sieves, K.O. Drums, thermal incinerators with various project functions and burners. Since it was established ITAS has firmly believed in manufacturing burners for all industries but in recent years it has developed burners for petrochemical sites, thermal incinerators, sulphur recovery plants, preheating ovens, pressure, in line, horizontal, vertical and down firing with circular or flat flame air heaters. These burners are suitable for burning oil, gas, steam, waste and tall gas, single fuels and in combination (2, 3, 4). These burners are available in different capacities, natural and forced draft, low and ultra-low

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1. Replacement of existing burners with Low NO<sub>x</sub> Low Noise Burners
2. Self-dismountable Burner
3. Very high efficiency oxidizer
4. Regenerative Plant



regenerative, regenerative and catalytic, solvent recovery plants with activated carbons, rotating concentrators). The RTO Regenerative Thermal Oxidizers deserve special attention because as air purification plants are suitable for any industrial application whatsoever. Nevertheless petrochemical companies have only recently shown a certain interest in this type of plant. That's why we highlight the oxidizer that ITAS is supplying to Saudi Kujun which is the first of its kind for an Italian company and is also one of the first to be installed worldwide in petrochemical plants. It is designed and built to high quality standard and with materials superior to those normally used for other industrial applications. This RTO is specially developed to treat streams generated in various sections of the LDPE plant containing as well potentially septable PE powders and as gaseous pollutants, ethylene and vinyl acetate. The plant thanks to high thermal efficiency operates under normal conditions without consuming any auxiliary fuel and guarantees at the same time low emissions inferior to the strict levels required by the Royal Commission Environmental Regulations. Cogeneration is closely linked to ecology and in this sector ITAS has many years experience and has developed a special burner for application downstream of the cogeneration systems with turbines or motors. These burners use as combustion air the combustion products of the turbines or motors, low in oxygen content and at high temperatures to increase them up to 1.200°C max. This means that you have a considerable energy saving with respect to traditional burners because there is no need to introduce any supplementary air into the system that would have to be heated starting from the ambient air temperature.

Another fundamental aspect of the study of this type of burner has been to design a burner with reduced emissions of CO and NO<sub>x</sub>. This burner is coupled to the com-

busation chamber (most important for reducing emissions), which is completely designed by ITAS according to the specific application. Special nozzles connected to air mixture planes with swirling effect are used whereby you obtain a flame propagation that assures the ignition of two rows side by side. This means you have a secure product, reliable and economic, and you can conform the burners using the greatest number of rows possible to uniform the temperature profile while having a considerable technical-economic saving as fewer pilots are required.

### AN INTERNATIONAL MANUFACTURER PAYING CAREFUL ATTENTION TO DETAIL

According to the customer's requests ITAS can supply goods (a works, PCB, CIP or turn key plants from zero to start up). The high technological parts are realized in house while the large steel structures or equipment (tanks, pumps, etc.) are subject of contract for bidding to a short list of suppliers approved by ITAS. According to the type of plant and the final destination the orders are placed with international suppliers. The most important example is the supply of very large flares to China (height up to 170m) where ITAS worked together in a joint venture with a local manufacturer for the steel structures and the vessels of which the sizing made transport difficult while the rest of the material was supplied from Italy. The high technology parts (flare tips, dynamic seals, PLCs, control and ignition panels for the burners) were realized in ITAS factory in conformity to international standards and the customer specifications. ITAS obtained ISO 9001:2000 quality system certificate in 1994 and is compelled to assure that its own staff and the suppliers of products and services keep the quality standard and follow the quality procedures especially for safety and environmental protection that are primary aims.

### A WIDE RANGE OF INDUSTRIAL PLANTS

A well known reference point for industrial combustion ITAS is an engineering and manufacturing company - one of the few with entire Italian capital - established in 1976 with its own premises of 8.500 m<sup>2</sup> including a test area equipped with a special oven complete with accessories and high technology instruments. The scope of all this is to design and construct an innovative range of burners with reduced NO<sub>x</sub> and CO emissions so as to meet with the toughest legislation also in force overseas. The international outlook of the company (50 employ-

NO<sub>x</sub> with manual or automatic control, supplied with PLC (different technologies as Allen Bradley, Siemens, Telemecanique and others in accordance with IEC-EN-50170 standards) for the management of burner batteries as well in accordance with the customer's specifications and international codes. ITAS manufactures burners for new plants and for replacement of products not in conformity with the legislation in force regarding emissions. We have often made turn-key supplies where besides the burners we have modified the own and supplied new piping and instruments. The BMS systems that control the burners are designed and entirely manufactured in our factory. To complete burners the supply includes both fixed ignition system, H.E. portable and flame detector, valve trains for various types of fuels, pumps and fans for the burner, assembly, scheduled maintenance, technical assistance, feasibility studies and spare parts.

### PLANTS FOR ECOLOGY

ITAS Ecology division proposes plants for the treatment of emissions both gaseous and liquid (thermal oxidizers



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→ Some recent contacts

PLANT	FEATURES	DESTINATION
Regenerative Thermal Oxidizer (RTO) complete with dust filtering system, intake fans, combustion system	Flow rate 122.500 kg/h LDPE plant	Saudi-Rayan (Saudi Arabia)
2 elevated flares height 108 m complete with molecular seal - dynamic seal and relative tips smokeless (90° e 72°)	Flow rate Flare 60° - 3540 t Flow rate Flare 72° - 3529 t	Ningde Lushan (China)
2 enclosed ground flares complete with adjustment system, dynamic seals. Completely smokeless flares.	Flares Gas flow rate: 100 ton Height: 40 m External diameter: 22 m	Ningde Lushan (China)
5 elevated flares complete with molecular seals, tips and control panels	Flares with various flow rates	Sotoback (Algeria)
Burners for petrochemical sites	Various capacities Low NOx and Ultra Low NOx Burners	Udaile for Egyptian (Egypt) Udaile - Surfont (Algeria) Udaile - Arab (Iran)
Burners for incinerators	Forced air In accordance with PED standard	IN (China) Shang (China) Petrofac, Qatar

which works with the main engineering companies worldwide has a great asset in its network of agents around the world. With investment in R&D and steadfast belief in "today is already tomorrow" ITAS can propose a diverse range of plants. ITAS operates with 4 divisions, Petrochemical, Ecology, Combustion Systems (which uses its own high technology burners mostly for applica-

tions in the converting, packaging, textile and ceramic sectors) and Automation which designs and realises electric control panels, PLC and DCS control systems as well as all required systems operational logic including CO, NO<sub>x</sub>, O<sub>2</sub>, TDC and VOC analysis. The Petrochemical Division carries out design (completely in 3D) construction, assembly and start up of plants with different technolo-

gies: flares elevated and ground equipped with 100% smokeless combustion tips, complete with molecular seals or venturi and dynamic seals/horizontal flares, offshore equipment, burners for all applications, oxidizers (thermal with heat recovery regenerative and/or liquid) combustion systems for industrial thermal processes and thermal incinerators with various project functions.

## Eco-Technologies for Chemical and Petrochemical Industry.

(Turnkey supply: Oxidizers, low NOx burners, flares and flares tips)



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Since 1876 ITAS has developed technologies dedicated to the chemical and petrochemical industry, thanks to which it has obtained scientific successes and built plants for leading groups worldwide. This invaluable experience together with the expertise and creativity of its engineers means that ITAS provides innovative technologies to obtain environmental compliance and sustainable development while respecting the most restrictive legislation.



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