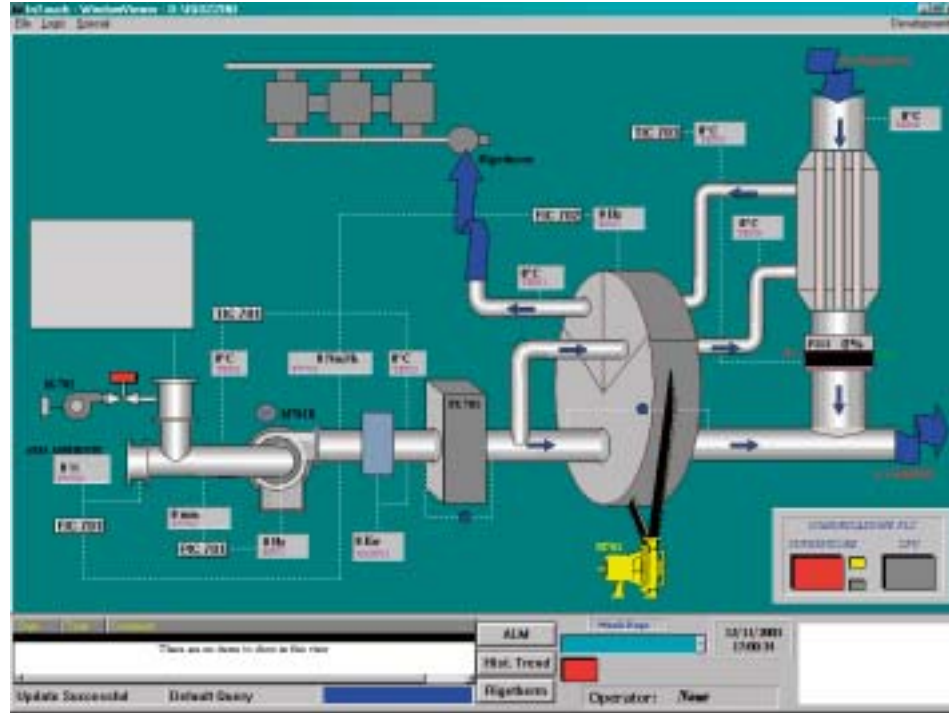


Further technology benefits



Plant diagram screenshot

First of all, the plant recovers the thermal energy contained in the hot flow coming from the Rigetherm® to preheat the air flow that performs

pollutant stripping while passing through the concentrator. In this way, no energy supply is requested from any other source and the installation

Data		Contract value	Test value
PLANT INLET			
Polluted air flow	Nm ³ /h	75'000	75'000
Polluted air temperature at inlet	°C	25	17
VOC concentration	g/Nm ³	0,170	0,128
CONSUMPTIONS			
Absorbed electric power for by air blower	kW	87	65
Gas metano	kW	0 ÷ 50	0
EMISSIONS			
TOC (Total Organic Carbon)	mg/Nm ³	<20	4,7
CO	mg/Nm ³	<100	non measurable
NOx	mg/Nm ³	<200	non measurable

of a 500 kW hot air generator, initially planned, was avoided.

The Table below summarises the benefits produced by our technological choice in terms of both energy saving and environment protection. As you can see, the chimney emissions are characterised by the following:

- average 4.7 mg/Nm³ COT content, against 20 mg/Nm³ foreseen and granted by ITAS;
- the CO content passed from a granted < 100 to a non measurable value;
- the content of NOx (responsible for the greenhouse effect) also resulted as non measurable, against a granted value < 200 mg/Nm³.

In conclusion, the advanced optimization, introduced in final project stages, permitted to achieve results in terms of energy saving and environment protection to classify the plant among the BATs (Best Advanced Technologies).



Section of rotary concentrator



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CASE HISTORY

A winning combination



When we talk about solvent abatement, the technological combination between concentrator and regenerative thermal oxidizer (RTO) plays a central role in environmental protection while offering significant advantages in terms of energy recovery.



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Overall view of the solvent abatement plant

iGuzzini is an Italian producer of lighting equipment for indoor and outdoor applications that finds its natural place at the top of European producers of lighting equipment.

Located at Recanati, in the Marche region, the company looks beyond the mere productions of pleasant objects that meet market requirements: at iGuzzini they maintain that light must be integrated in the environment without invading or undermining it, whether it is a matter of lighting a room rather than a palace, a cathedral, a museum, an airport or an entire city.

This approach goes hand-in-hand with the company's caring attitude towards the environment.

The booths, used in the factory for wet painting of components such as lamp supports and shells, generate emissions of solvents like toluene, butyl-acetate, iso-butyl-acetate and xylene.

As a matter of fact the concentration of pollutants is quite low, however at iGuzzini they wanted not only to avoid exceeding the existing regulations on environment pollution – thus fully satisfying ARPAM requirements – but wished to present to the local authorities, as well as to the population living around the production units, the image of a company highly sensitive to the protection of the eco-system.

To fulfil their intent, iGuzzini selected, among many suppliers screened in Italy and abroad, the Italian I.T.A.S., an engineering company that has emerged to represent an international reference point in the sector of industrial combustion and is fully qualified in accordance with UNI EN ISO 9001-2000 (Vision 2000), having also obtained the Certificate of Conformity No. 00341-94-AQ-MIL. - Sincert for its quality system.



Detail of rotary concentrator

Looking ahead



Plant section showing the ducts for capture of polluted air originated by the wet-paint booths

On the strength of the experience acquired in solvent abatement processes, of technologies developed through the years, of the quality of

their service and level of competitiveness, ITAS started the iGuzzini project from an analysis of all its aspects to identify the most suitable type of plant

for solvent abatement and for controlling the variable polluted airflows. All this keeping in focus the customer's guidelines to obtain emissions lower than those prescribed by national and local regulations and to keep operating costs as low as possible.

A further challenge was presented by the need to keep the plant's size within a defined, limited area of the industrial plant (where a museum is also hosted) realized in 1998 on a project by MCA/Architects.

Another parameter set by iGuzzini, in view of future growth, was to design the solvent abatement plant so that the initial capacity of 75,000 Nm³/h could be expanded to 120,000 Nm³/h. The size of fan, post-combustion unit, chimney and ducts was selected accordingly.

The turn-key abatement plant

The whole system, which started operating two months ago, was split into two parts: a) suction and collection of polluted air from the wet-paint booths; b) polluted air treatment plant. For the part a), ITAS supplied a feasibility study and an iGuzzini sub-contractor carried out fabrication and installation. For the part b), ITAS supplied both design and fabrication plus erection. The low level of pollutant concentration from 0 to 0.170 g/Nm³ oriented the design towards the winning combination of a zeolite concentrator with a Rige-therm® Mod. 5/95/3T post-combustor. The concentrator has the duty to split the coming polluted air from wet-paint booths into two flows. The first one, amounting to 94%, consists of purified air that may be directly sent to the chimney, while the second flow, amounting to the remaining 6%, reaches a heat exchanger to be warmed-up and goes back through the concentrator for stripping the pollutants. When it comes out from the concentrator, it contains polluting solvents up to about 2 g/Nm³ and has to be further treated in the Rige-therm® post-combustor. Actually, based on incoming concentration, the concentrated pollutant content may vary between 1.5 to 2.6 g/Nm³.



The three-tower RTO

Considering that these values are low for traditional abatement plants, the choice fell on the three-tower Rige-therm® RTO mentioned above. This works under auto-thermal exploitation and hence it allows a reduction of natural gas consumption to 0. The plant was also designed to allow minimum pressure drops in the flow thereby reducing the energy requirements of the process air fan

and of some auxiliary fans. The whole plant is managed by an ITAS control system that arises from the most developed technology. The control system is based on a PLC with monitor, which displays present and historical data through a series of screens, and a Profibus communication protocol. A modem connection to a supervisor, located by ITAS headquarters, allows to supply an on-line Customer's service.