

Fue gas cleaning and Heat Recovery Sistems

> Interconsult Italia Srl has developed the **new HRS**, leader in the dry electrofiltrantion tecnology

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About us

H.R.S. Engineering S.r.l. operated directly on the market from 1984 until 2009, adapting the dry electrofilter for typical applications in the textile industry.

In 2009, Interconsult Italia S.r.l. took over this activity, with the aim of studying new solutions demanded by the market.

The new, fully automatic **HRS** has been developed in accordance with Industry 4.0, with new electrofilters and high efficiency automatic cleaning system.

H.R.S. has developed its research and development programmes in liaison with:
Università Statale of MILAN
ENEA

- European Community
- Research and Environment Directorates-General

• ADEME

Agence de l'Environnement et de la Maìtrise de l'Energie - France



The best treatment technology for stenter flue gas and, therefore, for the typical oil mist of the textile sector

Electrofilter for oil particulate

- Raw fabric heat setting operations
- Finishing operations on fabrics
- Polymer lining/coating operations (e.g. PVC, using phthalates) on paper, fabrics, wood and metal panels and/or profiles.













Electrofilter for oil particulate



Cross-section of a standard dry electrofiltering plant with heat recovery and high efficiency automatic cleaning system FLUE GAS OUTLET

How a dry electrofilter works

The flue gas arriving from the stenter is cooled to create droplets of oil, forming what is called "oil mist". The oil droplets can thus be polarised and captured by the electrofilter with extremely high efficiency.





Standard plant with automatic cleaning system and the production of hot water



The new HRS plants remove oil mist from the flue gas with extremely high efficiency.

The electrical field of the electrofilters is able to capture all the droplets of the oil mist.

In the first part of the HRS plant, the hot flue gas of the stenters is cooled under controlled conditions to create the droplets, that is, the "oil mist". The new HRS uses a High Efficiency indirect cooling system managed with an open circuit controlled by a modulating valve to guarantee correct cooling.

This system enables recovery of all the heat present in the flue gas, transferring the same Kcal present in the flue gas to the water.

e In this way the Client is guaranteed good quality hot water to use in the various processes. This is the solution that best exploits the heat recovery process.





Mixed plant with automatic cleaning system and heat recovery



For Clients that need to clean stenter flue gas from oil, but do not require large quantities of hot water, we can install a "mixed" plant.

In this solution, a "closed circuit" is installed on the first standard heat exchanger of the new HRS.

This exchanger will be connected to two heat recovery systems for the production of hot air.

The air of the first heat recovery system can be sent

of gas. The air of the second heat recovery system can be used to heat the shed or conveyed outside during the summer months.

The cooling of the flue gas continues with an open circuit like in the standard HRS plants, in any case allowing a good production of hot water.





Standard plant with automatic cleaning system but no heat recovery



For Customers who have to clean the stenter's fumes, but do not need hot water, we can install an automatic washing system without heat recovery. In this solution, a "closed circuit" is installed on all four of the standard heat exchangers of the new HRS. The exchangers will be connected to a Dry Cooler to cool the same water.

This solution is more "costly" than the first two but allows flue gas to be treated with completely automatic adjustments and without creating problems for the Client.





Standard installation: W32

The new HRS solution allows the flue gas of any stenter to be treated even in the most difficult processes.

The international BAT, implemented in Italy, set a series of technical parameters that the new HRS fully complies with.

The new HRS is synonymous with high efficiency, is quality of the materials, is Industry 4.0, is new generation electrofilters, is automatic washing system, is the best solution available on the global market.

Maximum treatable flue gas flow	16'000 m³/h at150°C
Inlet flue gas temperature	80/210 °C
Outlet flue gas temperature	40°C
Inlet water temperature	20°C
Outlet water temperature	80°C
Quantity of water supplied	6,5 m³/h
KW recovered	540
Natural gas saved	55 m³/h
Treatment efficiency	90/95 %
Automatic washing system	INCLUDED
New HRS electrofilters	INCLUDED













Standard installation: W33

The electrofilters of the new HRS are powered by "sections" with new generation boards that check the supply voltage in real time, displaying the reading on the operator's panel.

The new HRS will be supplied with 3 electrofilter benches to comply with the international BAT but it will be set up to easily add another set in case of with big quantity of oil in stenter fumes.

The high efficiency is guaranteed by building mechanics of extremely high value and completely automatic management of the entire system.

Maximum treatable flue gas flow 24'000 m³/h at 150°C	
Inlet flue gas temperature	80/210 °C
Outlet flue gas temperature	40°C
Inlet water temperature	20°C
Outlet water temperature	80°C
Quantity of water supplied	10 m³/h
KW recovered	810
Natural gas saved	85 m³/h
Treatment efficiency	90/95 %
Automatic washing system	INCLUDED
New HRS electrofilters	INCLUDED



Ripatex (BARLETTA)









Standard installation: W34

The automatic washing system of the new HRS guarantees continuous and constant functioning of the plant, greatly reducing manual operations.

The electrofilters are designed to best meet the Client's needs and the plants are sized to optimize the costs, guaranteeing the required treatment.

The plants can be installed either inside the shed or outdoors and can be positioned either on the ground or on raised platforms above the stenters.

Maximum treatable flue gas flow rate	32'000 m³/h at 150°C
Inlet flue gas temperature	80/210 °C
Outlet flue gas temperature	40°C
Inlet water temperature	20°C
Outlet water temperature	80°C
Quantity of water supplied	13 m³/h
KW recovered	1'050
Natural gas saved	110 m³/h
Treatment efficiency	90/95 %
Automatic washing system	INCLUDED
New HRS electrofilters	INCLUDED













Plant type: W44

The new HRS allows fully automatic management of flue gas arriving from different stenters without creating problems at stenters' exhaust pipes. The fan is controlled by the inverter to guarantee a given depression; the modulating valve controls the quantity of the water in the heat exchangers to guarantee correct cooling of the flue gas. Automatic washing system takes place once a day with the stenters empty of fabric so as to avoid the emission of flue gas into the atmosphere.

Maximum treatable flue gas flow rate	44'000 m³/h at 150°C
Inlet flue gas temperature	80/210 °C
Outlet flue gas temperature	40°C
Inlet water temperature	20°C
Outlet water temperature	80°C
Quantity of water supplied	17 m³/h
kW recovered	1'440
Natural gas saved	150 m³/h
Treatment efficiency	90/95 %
Automatic washing system	INCLUDED
New HRS electrofilters	INCLUDED













Flue gas treatment-heat recovery in the textiles sector with HRS technology **CLIENTS ITALY**



COMPANY NAME T.F.S. **RI.PA.TEX.** MANIFATTURE SEGALINI **EUROJERSEY TIEMME** (secondo impianto) **TESSITURA SERICA BOSELLI ILUNA TESSITURA DI SOLBIATE T.B.M.** T.A.F.T. **HELGA RI.PA.TEX.** (secondo impianto) N.T.T. (ex L.T.S.) I.L.TE.P. **GIOVANNI GARAVAGLIA TI.BEL SPA (Calzedonia)** LOMAZZI (terzo impianto) **APPARECCHIATURA T.F.T. TEXFINISH** GABOLANA LAN.REGGIANI (Stab.AZETA) **TINTORIA LARIANA OREFICE & CORTI NEWCOLORS TEXCOLOR** MITI FILTE (Calzedonia) TIMA **TINTORIA DI ALBATE** MANIFATTURA NAZIONALE PEZZOLI TI.BEL SPA (CALZEDONIA) (secondo impianto) Brentino Belluno **BL COLOR FIMOTEX MITI (secondo impianto)**

HEADQUARTERS / LOCALITY Gallarate **Barletta** Molteno Caronno Pertusella Bulgarograsso Olgiate Comasco Cuggiono Solbiate Olona Bisuschio Carbonate Solbiate Arno **Barletta** Lurate Caccivio Pusiano **Busto Arsizio** Brentino Belluno Como Casnate Vertemate Prato Vallemosso Como-Camerlata Villaguardia Besnate Gallarate Urgnano Campogalliano Vanzaghello Gironico Cene **Busto Arsizio** Castano Primo Urgnano

Flue gas treatment-heat recovery in the textiles sector with HRS technology CLIENTS OVERSEAS



COMPANY NAME VAHE **DELCAR INDUSTRIES CARRINGTON NOVARE DE WITTE LIETAER FLOTATS** DOGI **COLORTEX 1967 HIDROCOLOR** SATINA **ATA TEXTILES** PUNTIBLOND TEXADE SARA LEE MARIGAM MONKS **COLORTEX INNOFA TEXTILES ATHENEA MOVELTA** WATTEX **BEKAERT TEXTILES** FLASH (Calzedonia) LAVA **MIRWAL**

HEADQUARTERS / LOCALITY Lyon - F Saint Quentin - F London - GB Lauwe - B Terrassa - E Barcelona - E Ontinvente - E Llinar del Valles-E Castellar d. Valles - E Tlalneplanta - MEX S.Pedro Vilamajor - E Terrassa - E Massanes - E Fafe - P Oostrozebeke - B Sint Niklaas - B Tilburg - NL Alicante - E Deerlijk - B **Buggenhout - B** Waregem – B Serbia Wielsbeke - B Polonia



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