

# FILTER MEDIA FOR INCINERATION



## & POWER PLANTS



GAS AND LIQUID FILTRATION

 **testori**<sup>®</sup>  
TESTORI GROUP

## Introduction

Testori has more than **30 years of experience** in supplying filter bags and media for waste incineration plants and coal fired boilers. We provide high quality products **for dust collectors** and customer service beginning with the media selection to the filter bag operation and maintenance.

Vertically integrated production, historical know-how, high levels of customization and R&D, give Testori the ideal position in these markets to meet the needs **of all customers**: architects & engineers, dust collector OEMs and end users. We are also available to supply felts (and woven fabrics) to dust bag and liquid filter cloth converters.

Incinerators and power plants have highly stringent requirements for emissions: Testori generally provides warranties for dust emissions complying with most stringent environmental regulations as well as long lifetimes.



Brescia incinerator



Eskom Majuba coal power plant



Incinerator - Courtesy of Lomellina Energia

## TESTORI PRODUCT PORTFOLIO FOR INCINERATORS & POWER PLANTS

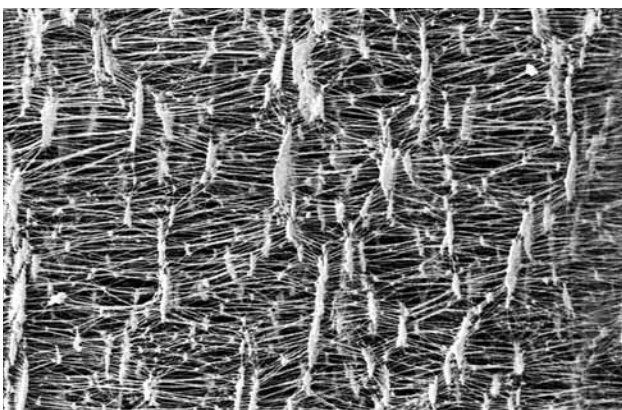
To generate steam and produce electricity, the fuel used in the boiler can be oil, gas, coal or biomass. The side product of combustion are the gases which need to be neutralized (mainly  $\text{SO}_2$  and  $\text{NO}_2$ ) and the particulate which must be filtered out before reaching the stack.

Testori offers a wide range of filter media depending on to:

- The neutralization method:
  - **Dry Process:** lime is injected as dry powder directly into the boiler or before the filter unit
  - **Semi Dry Process:** water is added to the gas stream before lime injection at the filter unit
  - **Semi wet Process:** hydrated lime is dispersed/atomized into the reactor where hot gases are passing through
- The neutralizing agent: hydrated lime or sodium carbonate for desulphurization; ammonia for nitrogen oxides



Bag Filter



TTX Membrane - detail



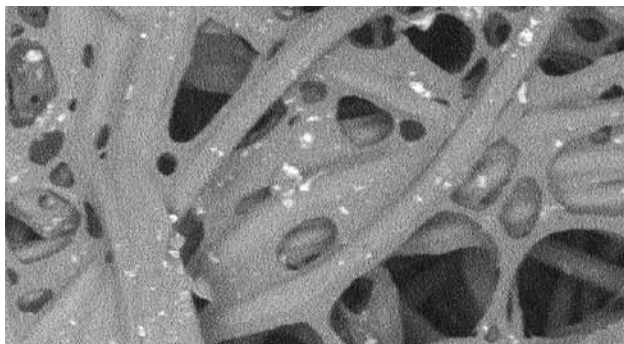
Power Plant Torrevaldaliga Nord ENEL - Courtesy of Termokimik



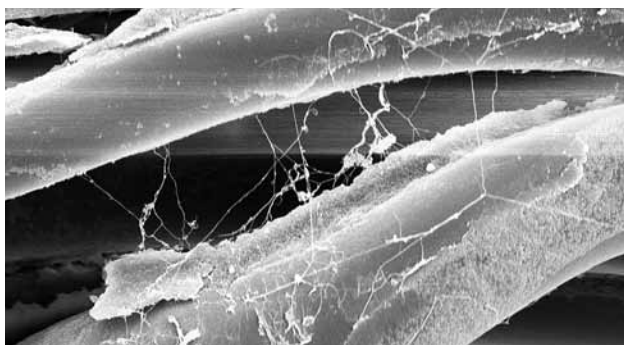
## GAS FILTRATION

Testori offers filtering solutions for the most difficult fly ash which is very fine, sticky and tends to blind the filter media.

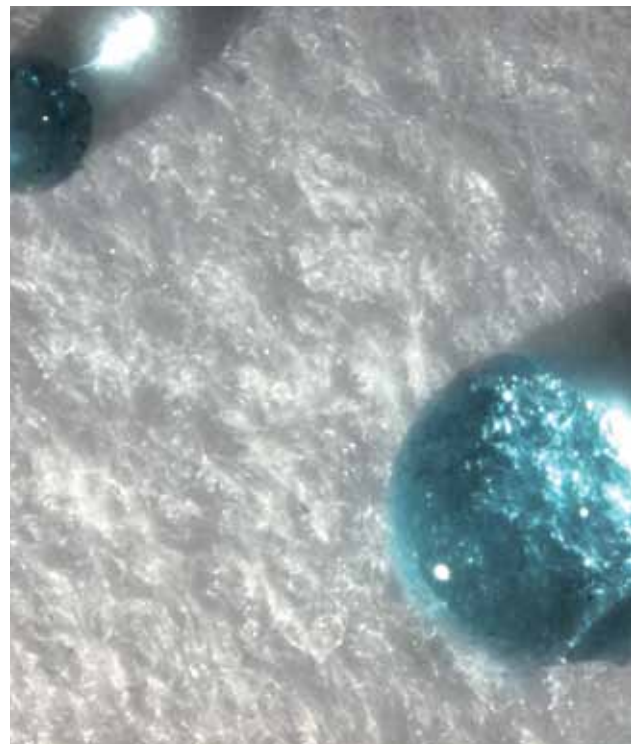
Solutions	Features	Benefit
"MULTILAYER" NEEDLEFELTS	<ul style="list-style-type: none"> <li>Layered structure with fibers of different fineness positioned through the depth of the felt and finer fibers located predominantly on the dust side</li> <li>Use of fibers with different cross section profiles (trilobal, multilobal, etc.) and made from different polymers (P84®, PPS, acrylic, PTFE and blends)</li> <li>Different air permeability and surface finishing (membrane, intrinsic coating, calendered, both sides glazed, deep foam coating). Examples of our surface treatments: MT- Mantes, RH-Rhytes PT - PTFE deep coating</li> </ul>	<ul style="list-style-type: none"> <li>Fine fibers on dust side reduce the dust penetration through the media extending the bag life</li> <li>Emission reduction to values below 5mg/Nm<sup>3</sup></li> <li>Reduced clogging effect</li> <li>Surface finishing helps cake release and reduce chemical attack of the polymer</li> </ul>
SPECIAL TREATMENT - SUPERNOVATES	<ul style="list-style-type: none"> <li>High temperature resistant coating applied to reduce average pore size of needlefelts for high temperature applications</li> </ul>	<ul style="list-style-type: none"> <li>Higher efficiency</li> <li>Emission reduction to values below 5mg/Nm<sup>3</sup> at the stack</li> </ul>
PTFE NEEDLE FELT	<ul style="list-style-type: none"> <li>Needlefelt in the range of 700 to 850 g/m<sup>2</sup> either coated with PTFE or with expanded PTFE membrane</li> <li>Continuous Temperature resistance: &gt; 220°C</li> <li>Suitable to variable fuel composition</li> </ul>	<ul style="list-style-type: none"> <li>Low emissions</li> <li>Long bag lifetime</li> <li>Excellent cake release and filtration performance</li> <li>Excellent resistance to chemical corrosion, oxidative/hydrolytic environments</li> </ul>
SPECIAL PTFE SEALING TAPE	<ul style="list-style-type: none"> <li>Suitable for any fiber (also with expanded PTFE membrane)</li> <li>Applied both to sewn and thermo-welded seams along the bag length and to the reinforcement and bottom</li> </ul>	<ul style="list-style-type: none"> <li>Emission reduction to values below 5mg/Nm<sup>3</sup></li> <li>No dust leakage at the stitching</li> </ul>
FILTER BAGS	<ul style="list-style-type: none"> <li>Lengths up to 10 meters</li> <li>Top cuff with steel band or ring for circular and oval bags</li> </ul>	<ul style="list-style-type: none"> <li>Perfect fit in cell plate hole</li> <li>No dust penetration through the top cuff</li> </ul>



SuperNovates treatment



Mantes treatment

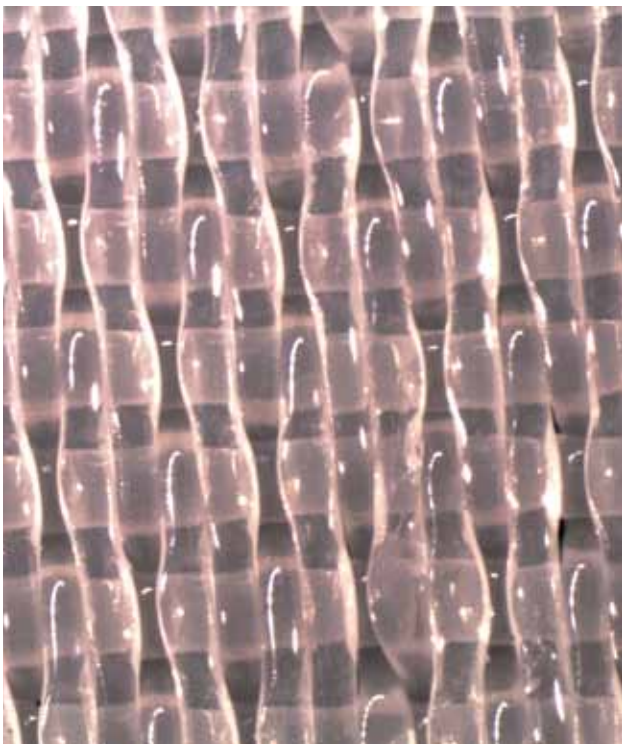


Kleentes treatment

## LIQUID FILTRATION

All power plants with a wet process need **liquid filtration equipment to dewater and recover gypsum** produced by FGD (flue gas desulfurization). Water is used to wash and neutralize the exhaust fumes from the boiler; afterwards the filtered water is reused. **Testori offers a wide range of filter cloths for filter presses, rotary drum and rotary vacuum filters and horizontal belt filters.** Filter presses are largely used in power plants since they guarantee good performances and low operational costs. Vacuum belt filters are the best solution for dewatering to ensure low energy consumption, high efficiency and long lifetime.

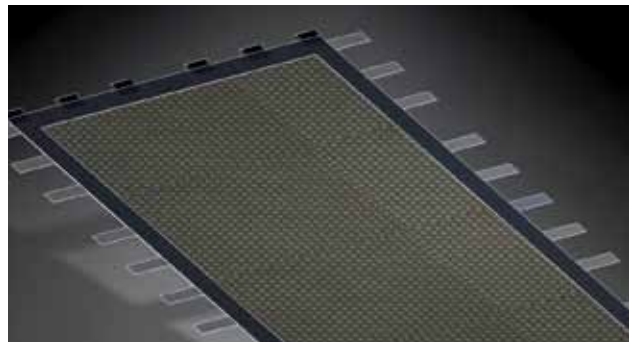
Solutions	Features	Benefit
FILTER CLOTHS	<ul style="list-style-type: none"><li>• Polypropylene fabrics in mono/mono and mono/multi construction</li><li>• Polyamide monofilament fabrics for special filtration applications</li><li>• With or without center feed hole</li></ul>	<ul style="list-style-type: none"><li>• High durability</li><li>• Excellent cake discharge</li></ul>
BELT FILTERS	<ul style="list-style-type: none"><li>• Polypropylene, polyester and nylon fabrics</li><li>• Wide range of weight and constructions (double layer, sateen, twill...)</li><li>• Different types of tracking systems: rubber edge guides, heat cut, coated edges</li></ul>	<ul style="list-style-type: none"><li>• Long lifetime</li><li>• Optimal dewatering efficiency</li></ul>



Monofilament fabric-detail



Woven fabrics



Filter cloth drawing

## FILTER MEDIA: TECHNICAL DETAILS

Testori product line (main styles and properties):

	Material	Testori code	Application				
			Neutralization with lime	SCR=selective catalytic reaction	NSCR=non selective catalytic reaction	Neutralization with Sodium Carbonate	Liquid filtration
FELT	PTFE	F 702 PT	■	■	■	■	
		F 752 PT	■	■	■	■	
		PRF 830 GTX	■	■	■	■	
	PTFE + P84®	PRP 680 PT	■	■	■	■	
	P84®	X 544 MT	■		■	■	
		X 547 MT	■		■	■	
		XF* 547 MT	■	■	■	■	
	PPS	S 558 MT	■		■		
		S 558 SA	■		■		
		SF* 558 MT	■		■		
		SX 601 SA	■		■		
		SX 600 MT	■		■		
	PAN	D 525 SA	■	■	■		
		D 601 SB	■	■	■		
		DX 600 SB	■	■	■		
	Glass	G 747 KTX	■	■	■	■	
WOVEN FABRIC	Polyester	T 8161 TQ					■ d.l.
		T 8195 TQ					■ d.l.
	PA	N 4462 CQ					■

Legenda: FE/PRF = PTFE | X = P84® | S = PPS | D = acrylic | G = glass | N = polyamide | T = polyester | d.l. = double layer woven fabric

\* PTFE scrim

## CUSTOMER ORIENTED APPROACH & INNOVATION

Testori's vertically integrated production processes guarantee **high production capacity**, high quality and **complete traceability** of our products with **qualified technical assistance** from raw material selection to finished products and **after sales support**.

Most of our solutions involve **customized designs** with efficient dust retention, long life, specific manufacturing elements and



P84® bag



PPS bag

Properties							
Max operating Temperature °C (dry conditions)	Air permeability @ 200 Pa l/dm <sup>2</sup> · min	PTFE coating	PTFE membrane	Multilayer	Heavy scrim	Weight g/m <sup>2</sup>	Thickness mm
240	120	■				700	1,0
240	100	■				750	1,1
240	30		■			830	1,3
230	120	■				680	1,5
230	120	■				580	2,2
230	140	■		■		560	2,2
230	140	■				550	2,4
160	100	■				570	1,5
160	150					550	1,7
190	120	■		■		570	1,5
160	140			■	■	600	2,0
160	120	■		■	■	600	2,0
130	170					525	2,4
130	130			■	■	600	2,5
130	130			■	■	600	2,5
260	30		■			770	--
150	1450					1230	1,7
150	1840					1250	1,7
100	300					350	1

All data are not binding and may vary

laboratory test reports (if requested).

Testori has always been a leader in R&D projects providing filtration solutions for our customers using the newest technologies and products available.



Burst test



Brescia incinerator



ITALY

FRANCE

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