aeversu summit

September 29th, 2026
Espacio Pablo VI, Madrid

TESTORI GROUP – THE EXPERTS for LOW-EMISSION INDUSTRIAL FILTRATION for WASTE to ENERGY APPLICATIONS since DECADES

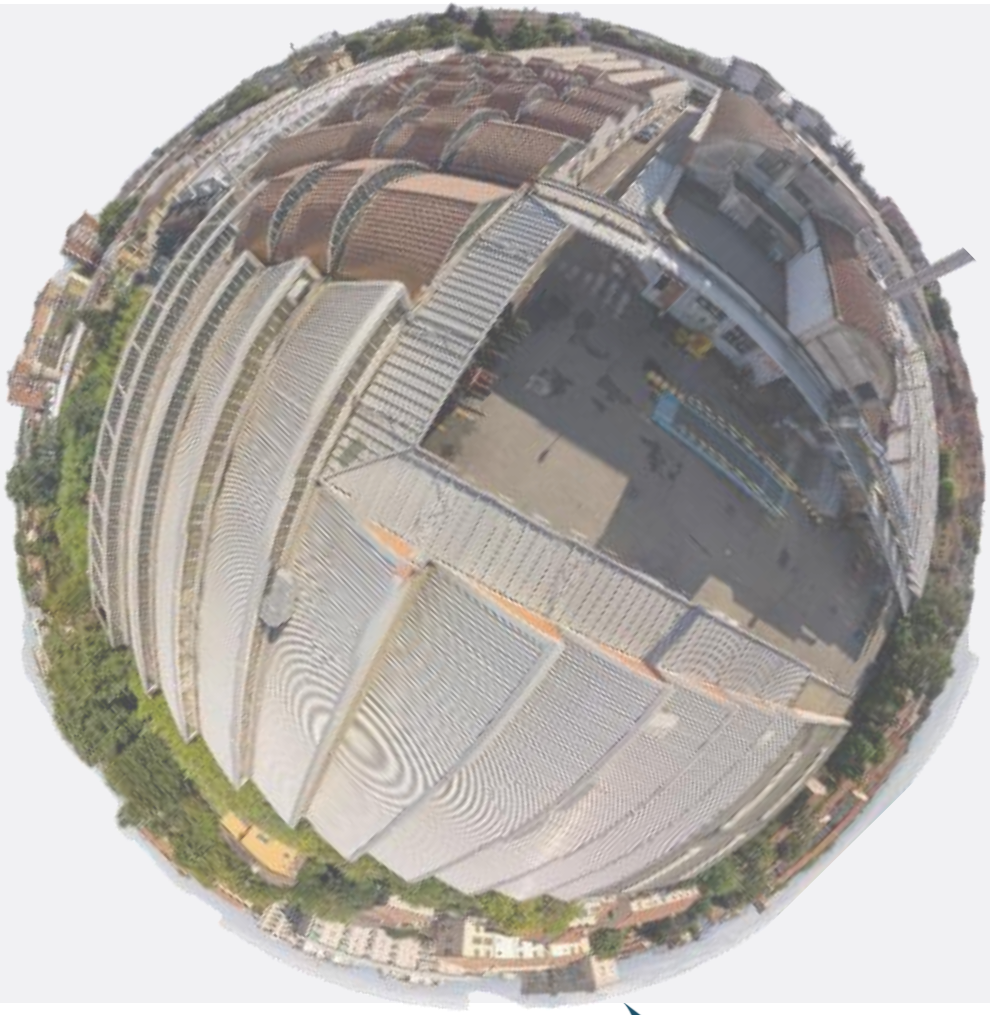
GAS, LIQUID & PHARMA FILTRATION

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Welcome to Testori

- Italian Family- Owned Company since 1905
- More than 120 Years of Filtration Experience
- Global Supplier for Industrial Filtration solutions
- Serving Environmental, Industrial, Food and Pharmaceutical Markets
- Experts in Dry and Liquid Filtration

➔ **We help customers reduce emissions, improve efficiency and protect the environment**



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MARKET DRIVERS

- Stricter BAT Requirements
- Higher Plant Availability
- Lower Operating Costs
- Sustainability Targets
- Future PFAS Restrictions

FILTER MEDIA SELECTION DIRECTLY AFFECS

- Emissions
- Pressure Drop
- Energy Consumption
- Bag Lifetime
- Maintenance Costs

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WTE (BAT) EU: IED 2.0 (2010/75), amended by Dir. 2024/1785

- Emission Limits ontinue to tighten
- Dust Emissions below 2–5 mg/Nm³ are becoming standard
- Filter Performance is critical for compliance and Plant Availability

Air Emission at stack		EU: BREF/BAT AELs (March 2024)			GER: 17 BimSchV / ELV (February 2024)			
POLUTANTS	Unit (11% O2, dry)	New plants	Existing Plants	Sampling period	Daily avrg.	Half hour avrg.	Yearly avrg.	Sampling period
Dust	mg/Nm³	< 2 - 5		daily	5	20		continuous
TVOC	mg/Nm³	< 3 - 10		daily	10	20		Continuous
CO	mg/Nm³	10 - 50		daily	50	100		Continuous
HCl	mg/Nm³	< 2 - 6	< 2 - 8	daily	6 / 8[1]	40		Continuous
HF	mg/Nm³	< 1		daily	0,9	4		Continuous
SO_2	mg/Nm³	5 – 30	5 - 40	daily	30 / 40[1]	200		continuous
NO_x as NO2 (SCR / SNCR)	mg/Nm³	50 – 120	50 - 150	daily	120	400	100	continuous
(SNCR / SCR not available)			up to 180		150[1,2] / 180[1,3]			
NH_3 (SCR / SNCR)	mg/Nm³	2 – 10		daily	10	15		continuous
Hg	µg/Nm³	< 5 – 20		daily	10	35	5	continuous
PCDD/F	ng_{I-TEQ}/Nm^3	< 0,01 - 0,06	< 0,01 - 0,08	periodic	0,06			periodic
					0,08[1] / 0,1[1]			
Cd + Ti	mg/Nm³	0,005 - 0,02		periodic	0,02			Periodic
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V	mg/Nm³	0,01 - 0,3		periodic	0,3			periodic

➔ **Better Filtration means Lower Emission and Lower Risk!**

(1) For existing WTE plants / (2) for WTE plants with capacity < 50 MW / (3) for co-incineration plants with capacity < 50 MW

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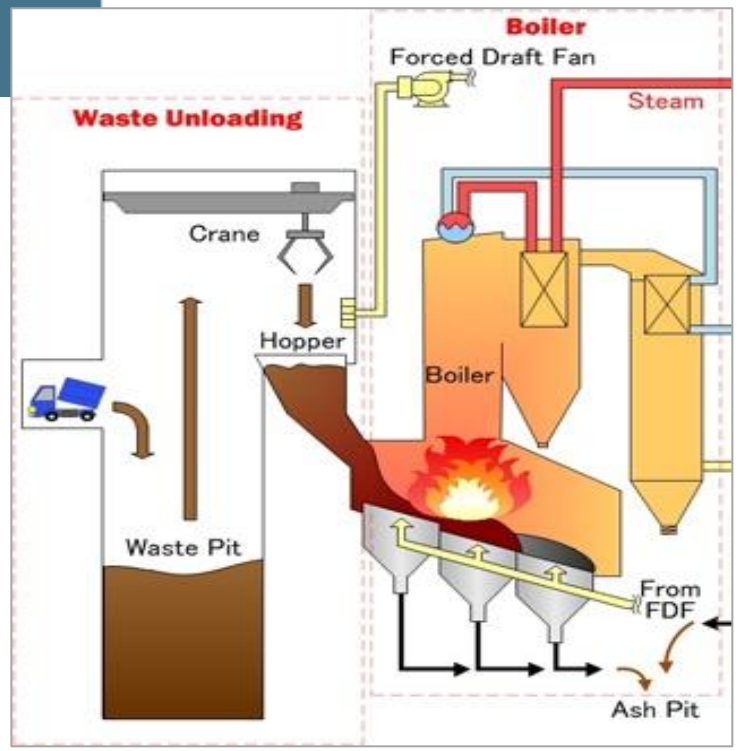
Typical Fuels for WTE and Biomass Plants

- *Urban- / Municipal solid waste fractions*
- *RDF (Refuse Derivate Fuels) / SRF (solid recovered fuels)*
- *Special- / Hazardous- / Industrial Waste types (solid / liquid / pasty)*
- *Industrial- / Biological Sludge (solid / pasty)*
- *Biomass and Agricultural Residues (mainly solid- / sometimes pasty or liquid)*

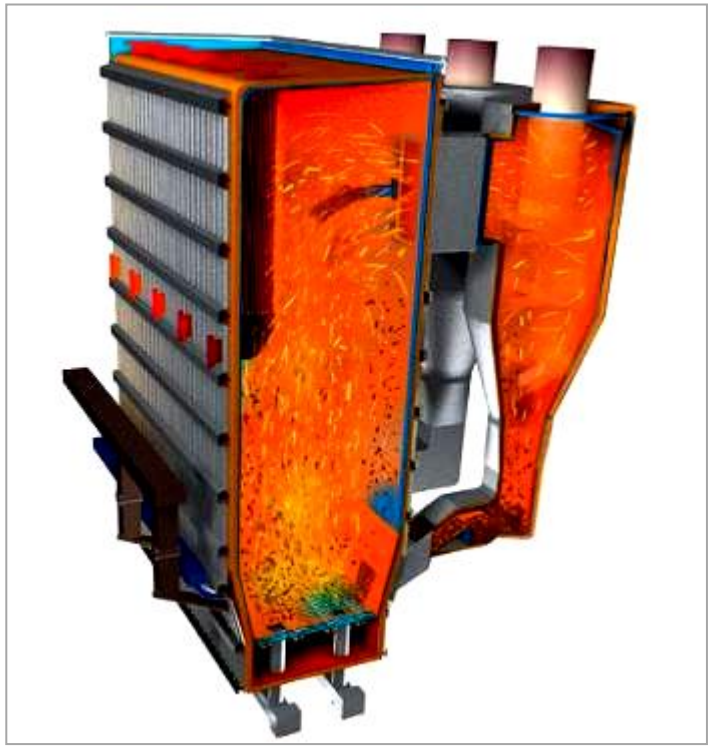
➔ **Every Fuel creates Different Filtration Challenges!**

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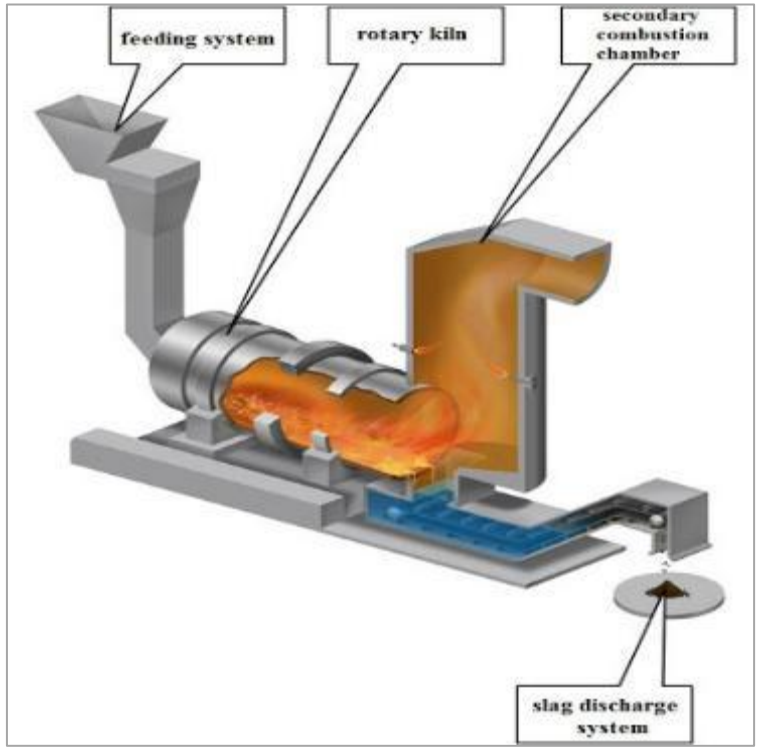
WTE (Waste to Energy): Typical Combustion- / Boiler Systems



Typical Grate type combustion



FBC (fluidized bed) - type combustion



Rotary Kiln + High Temp. Post Combustion

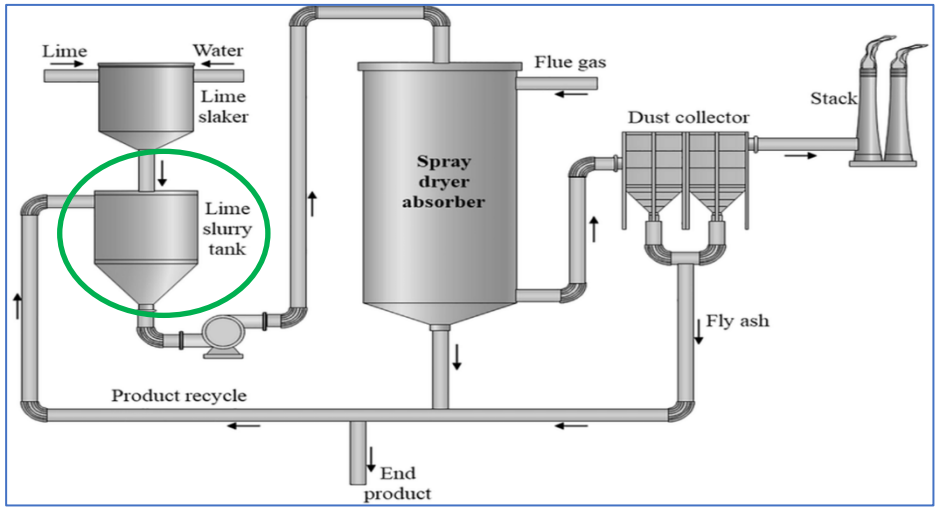
➔ **Combustion Technology determines Flue Gas / Dust Characteristics!**

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SEMI-DRY FGT Spray Reactor with Lime-Milk (+ PAC)

SYSTEM FACTS:

- ***Temperature:*** 130 – 150°C (peaks: 240/260°C)
- ***Flue gas:*** - medium- to high moisture (vol% H_2O)
  - medium oxygen (vol% O_2)
  - little HCl, SO_2, HF
- ***Dust:*** up to 30 g/Nm³
  well agglomerating



Schematic Source: IN

TESTORI SOLUTIONS:

- ***MICROFELT PI:*** Polyimide (P84) micro-fibre construction
  500 – 550 g/m² material area weight
- ***MICROFELT PRP:*** PTFE + P84 fine / micro fibre blends
  650 – 700 g/m² material area weight
- ***MICROFELT PTFE / KTX:*** Fine fibre constructions
  optional with ePTFE Membrane
  750 – 800 g/m² material area weight



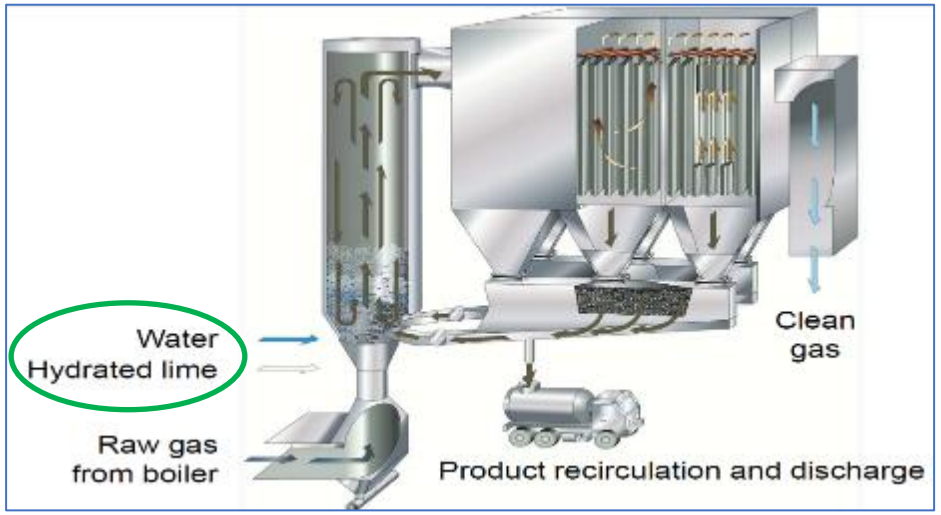
Typical Bag Lengths:
5 - 7 m

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COND. DRY FGT, Turbulence Reactor + dry $Ca(OH)_2$ / PAC

SYSTEM FACTS:

- ***Temperature:*** 130 – 150°C (peaks: 240/260°C)
- ***Flue gas:***
  - low- to medium moisture (vol% H_2O)
  - medium oxygen (vol% O_2)
  - little HCl, SO_2, HF
- ***Dust:*** 400 – 2.000 g/Nm³
  floating, very fine



Schematic example, Source: IN

TESTORI SOLUTIONS:

- ***MICROFELT PI:*** Polyimide (P84) micro-fibre construction
  500 – 550 g/m² material area weight
- ***MICROFELT PRP:*** PTFE + P84 fine / micro fibre blends
  650 – 700 g/m² material area weight
- ***MICROFELT PTFE / KTX:*** Fine fibre constructions
  optional with ePTFE Membrane
  up to 800 g/m² material area weight



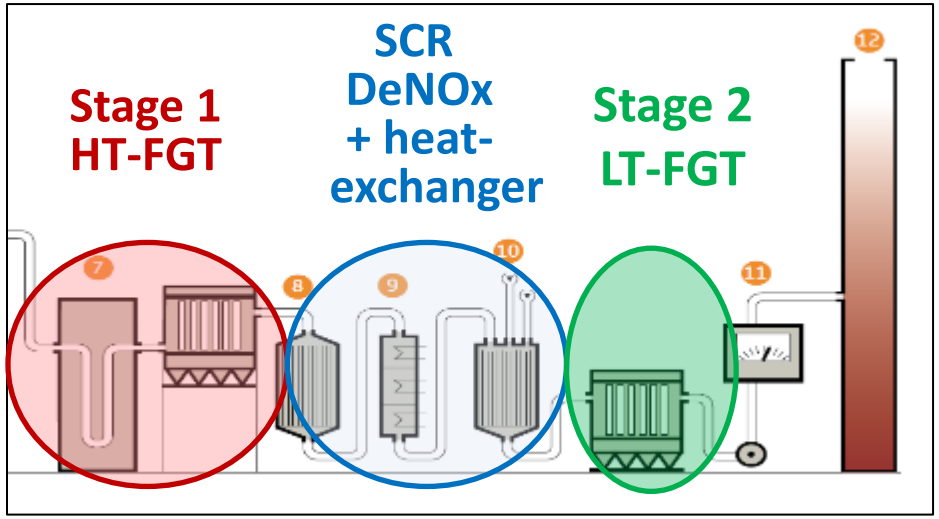
Typical Bag Lengths:
2,5 - 7 m

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2-STAGE DRY FGT: 1st HT (+ BICAR) / 2nd LT (+ $Ca(OH)_2$ / PAC)

SYSTEM FACTS:

- ***Temperature:*** **HT:** 180 – 220 °C (peaks: 240 – 260 °C)
  LT: 110 – 120 °C (no peaks)
- ***Flue gas:*** - low- to medium moisture (vol% H_2O)
  - medium oxygen (vol% O_2)
  - little HCl, SO_2, HF
- ***Dust:*** **HT:** 5 – 10 g/Nm³ / **LT:** 5 – 20 g/Nm³
  HT: floating, very fine / **LT:** agglom., fine



Schematic example, Source: IN

TESTORI SOLUTIONS:

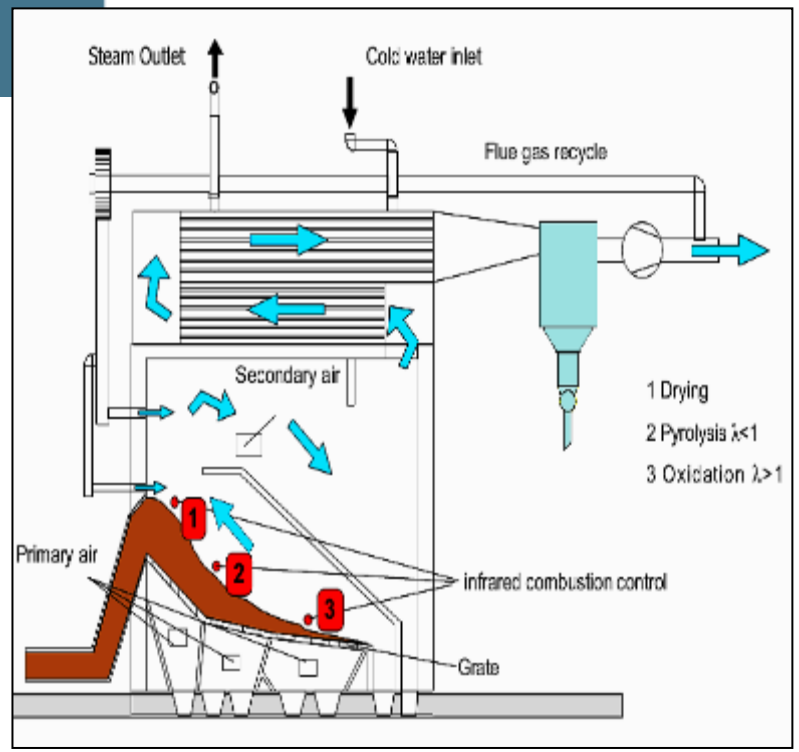
- **HT:** ***MICROFELT PRP:*** PTFE + P84 fine / micro fibre blends
  650 – 700 g/m² material area weight
- **HT:** ***MICROFELT PTFE / KTX:*** Fine fibre constructions
  optional with ePTFE Membrane
  750 - 800 g/m² material area weight
- **LT:** ***MICROFELT PPS / KTX:*** PPS fine / micro fibre blends
  550 – 600 g/m² material area weight



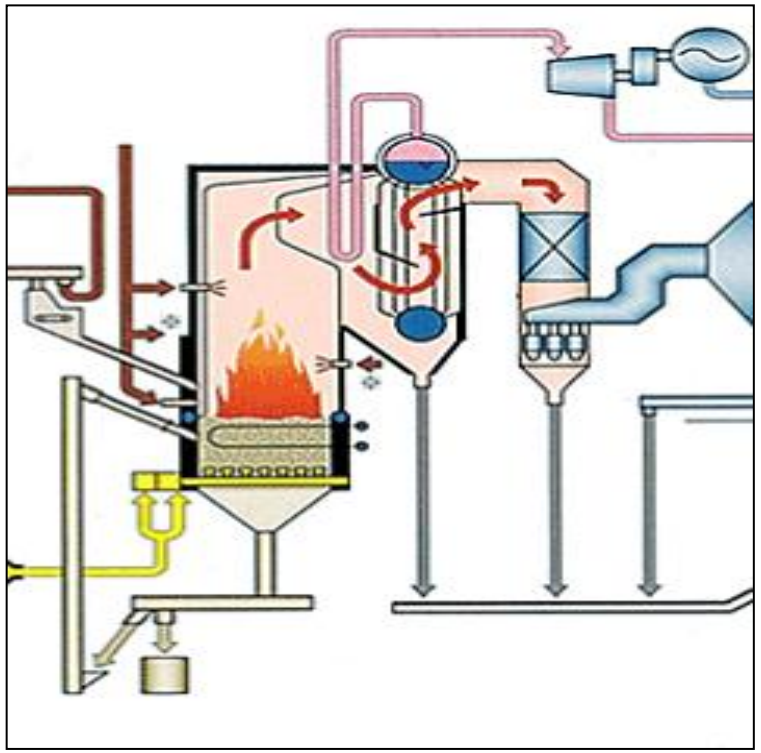
Typical Bag Lengths:
2,5 - 7 m

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BIOMASS: Typical Combustion- / Boiler Systems



Step-Grate type combustion



Moving Grate Type (rice husk, etc.)



BFBC (Bubbling Fluidized Bed)

➔ **Combustion Technology determines Flue Gas / Dust Characteristics!**

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Typical Fluegas- and Flyash comp. from Biomass combustion

SYSTEM FACTS:

- ***Temperature:*** 150 - 180°C (peaks: 180/260°C)
- ***Flue gas:***
  - 8 – 35 vol% H_2O / 4 – 12 vol% O_2
  - ca. 50 – 400 mg/Nm³ NOx
  - ca. 0 – 400 mg/Nm³ SOx
  - ca. 0 – 500 mg/Nm³ HCl
  - up to 40 mg/Nm³ NH_3 (high protein fuels)
- ***NOTE:*** For other than "natural" biomass sources (e.g. contaminated waste wood, etc.), FGT is necessary!
- ***Dust:*** Ca. 0,5 – 30 g/Nm³ (pure fly ash after preseparation)
  Mainly alkali- and earth alkali as basic components (**Ca, Mg, K, Na**), while higher concentrations of hygroscopic / sticky components like **K** (up to 20wt%) and **P_2O_5** (up to 3 wt%) are not unusual!
  Abrasive **SiO_2** can reach up to 85wt%!
- ***Dust properties:*** In most cases sticky and very hygroscopic"

TESTORI SOLUTIONS:

- ***MICROFELT PPS:*** PPS fine / micro fibre blends
  550 – 600 g/m² material area weight
- ***MICROFELT PRP:*** PTFE + P84 fine / micro fibre blends
  650 – 680 g/m² material area weight
- ***MICROFELT PTFE :*** Fine PTFE fibre constructions
  750g/m² material area weight



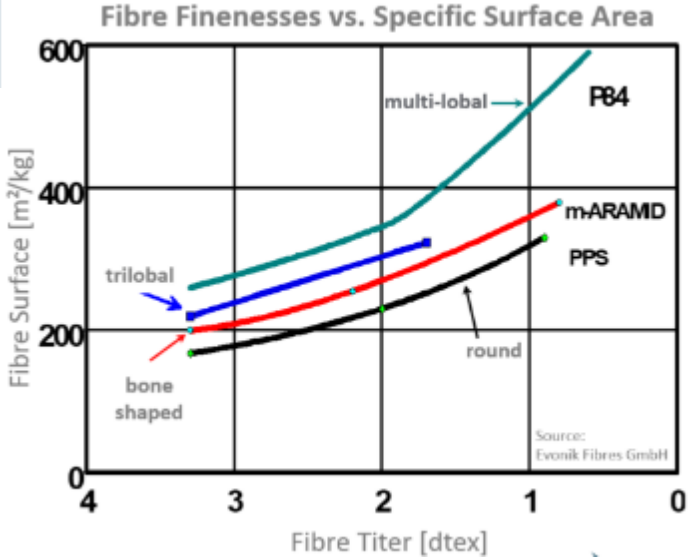
Typical Bag Lengths:
2,5 - 6 m

➔ **Operational Risks: Bag blinding, increased Δp, reduced lifetime!**

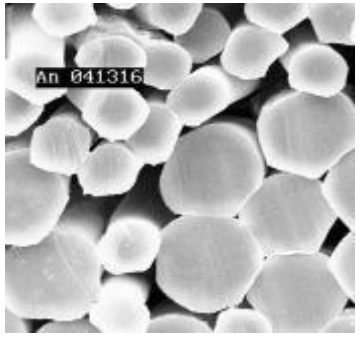
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High-Performance Filtration through MICROFELT Constructions

FIBRE CROSS-SECTIONS and FINENESS vs. ACTIVE FILTRATION SURFACE

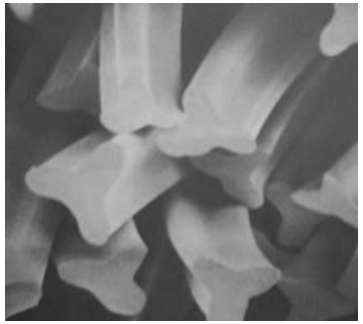


STANDARD SHAPED **MICRO** FIBERS





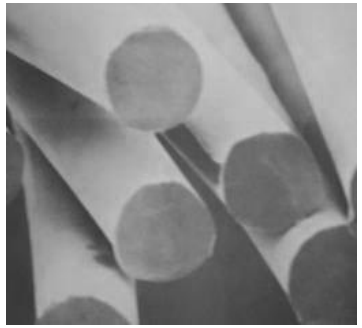
Multilobal P84®



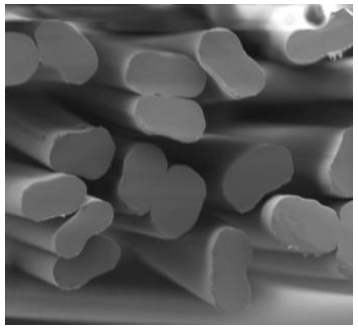
Trilobal PPS

[m²/kg]

STANDARD SHAPED FIBERS, **STANDARD** FINENESS



Round shaped PES, PP / PPS



Dog-bone / kidney shaped NOMEX® / PAN

HIGH FILTRATION PERFORMANCE through higher active FILTERING SURFACES

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WHY CUSTOMERS CHOOSE TESTORI

FROM FIBER TO FILTER

- MATERIAL SELECTION
- PRODUCT DEVELOPMENT
- CUSTOMIZED DESIGN
- MANUFACTURING
- LOGISTICS
- TECHNICAL SUPPORT
- PRE & AFTER SALES SERVICE

FULL VALUE CHAIN

➔ **Technology, Experience and Customer Focus**

- Strong R&D and Innovation
- Tailored Media Solutions
- Troubleshooting Support
- Process Expertise

ISO CERTIFIED MANUFACTURING











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PFAS TOPIC - NOTIFICATION

- ***TESTORI High- Temperature Filter Bags for WTE- and BIOMASS comply with current EU PFAS Regulations for Industrial Textiles!***

- PFOS	(EU) No. 2019/1021
- PFOA	(EU) No. 2019/1021
- PFCA (C9 – C14)	(EC) No. 1907/2006 (REACH), annex XVII, entry 68
- PFHxS	(EU) No. 2019/1021

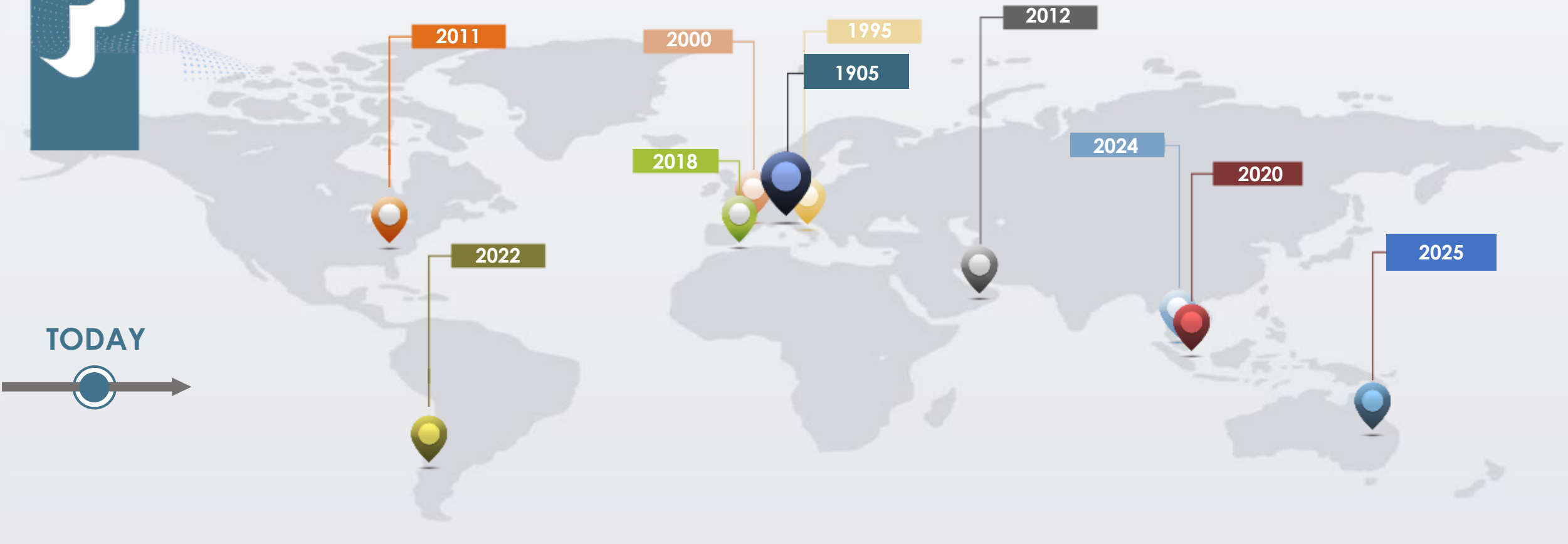
- ***Upcoming Ban on Fluorinated Polymers, specifically PTFE***

  TESTORI is working on developments for alternative, FLUORO-FREE, high temperature resistant filter media, providing highest filtration performance, being suitable for existing WTE and BIOMASS-combustion- and Flue Gas cleaning systems (FGTs)!

➔ **Preparing Customers for Future Regulatory Changes!**

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LEADING THE WAY TO FILTRATION



LOCAL SUPPORT with GLOBAL EXPERTISE

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KEY TAKEAWAYS

COMPLIANCE

BAT Requirements continue to Tighten

TECHNOLOGY

Filter Media Choice directly Impacts Stack Emissions

PERFORMANCE

Optimized Filtration Improves Plant Reliability

FUTURE

TESTORI is Developing PFAS-ready Solutions

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THANK YOU!!



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