

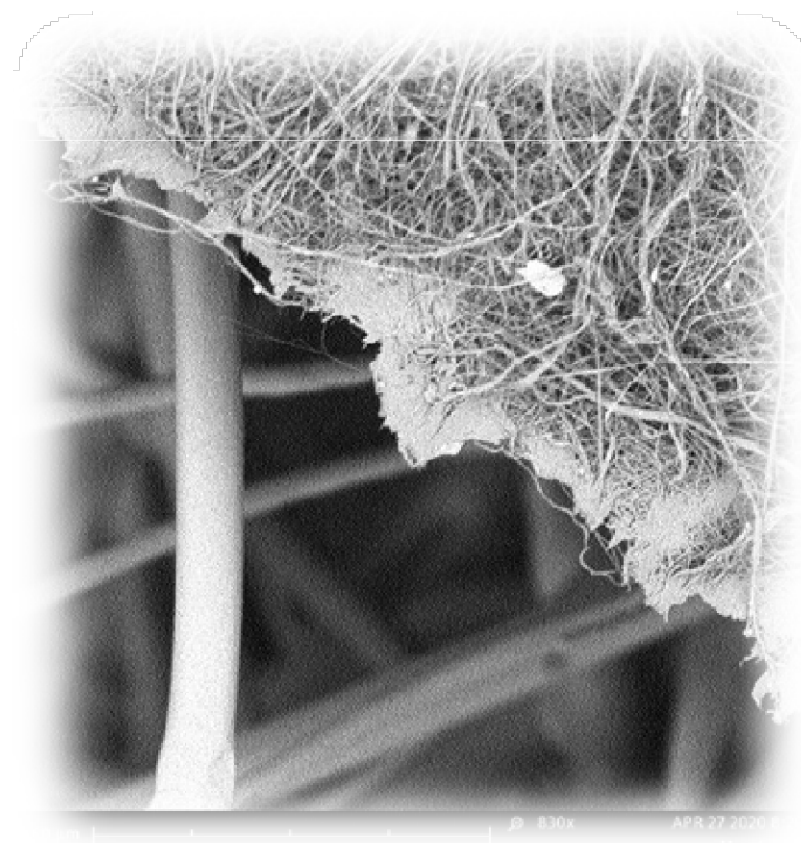


„we make nanofibers“

FILTRATION MATERIALS FOR COVID-19 PROTECTION

Jan Buk, CEO

Roudnice nad Labem, January 2021



ABOUT US

Has been in the field of R&D of nanofibrous materials and technologies since 2009

Unique technology – centrifugal spinning

Unique materials – inorganic and polymer nanofibers (6 granted patents / 5 utility models)

Unique products – with a high added value, developed in close collaboration with customers

Unique know-how – in development of nanofibrous materials, products and production technologies

BIG POTENTIAL

resulting from

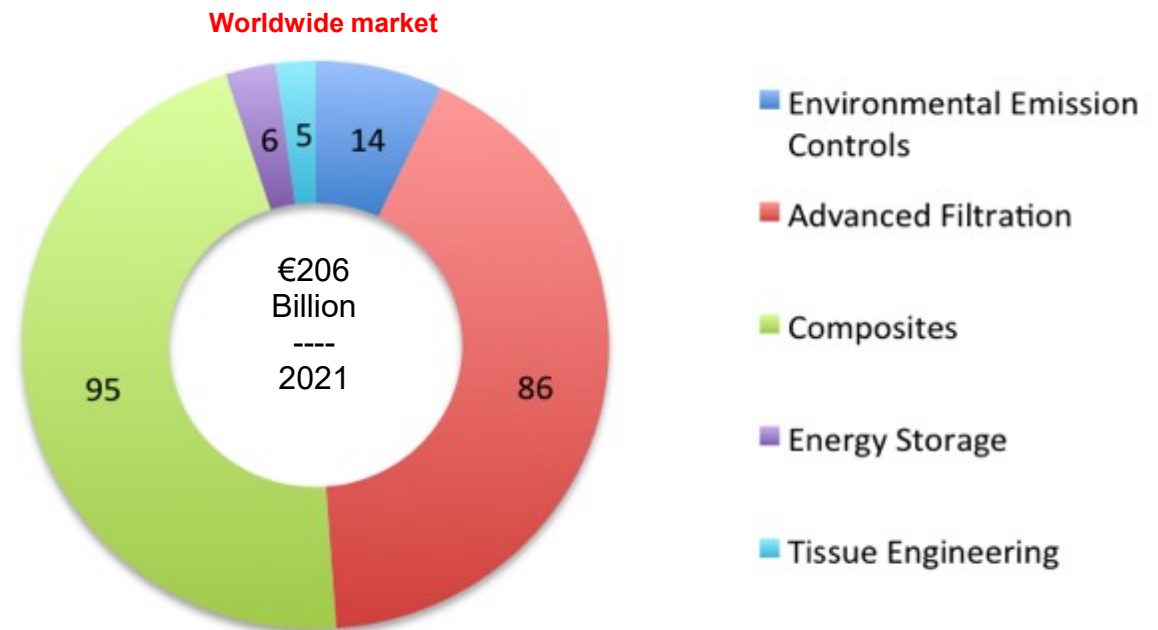
Own know-how

Own technologies

Own products

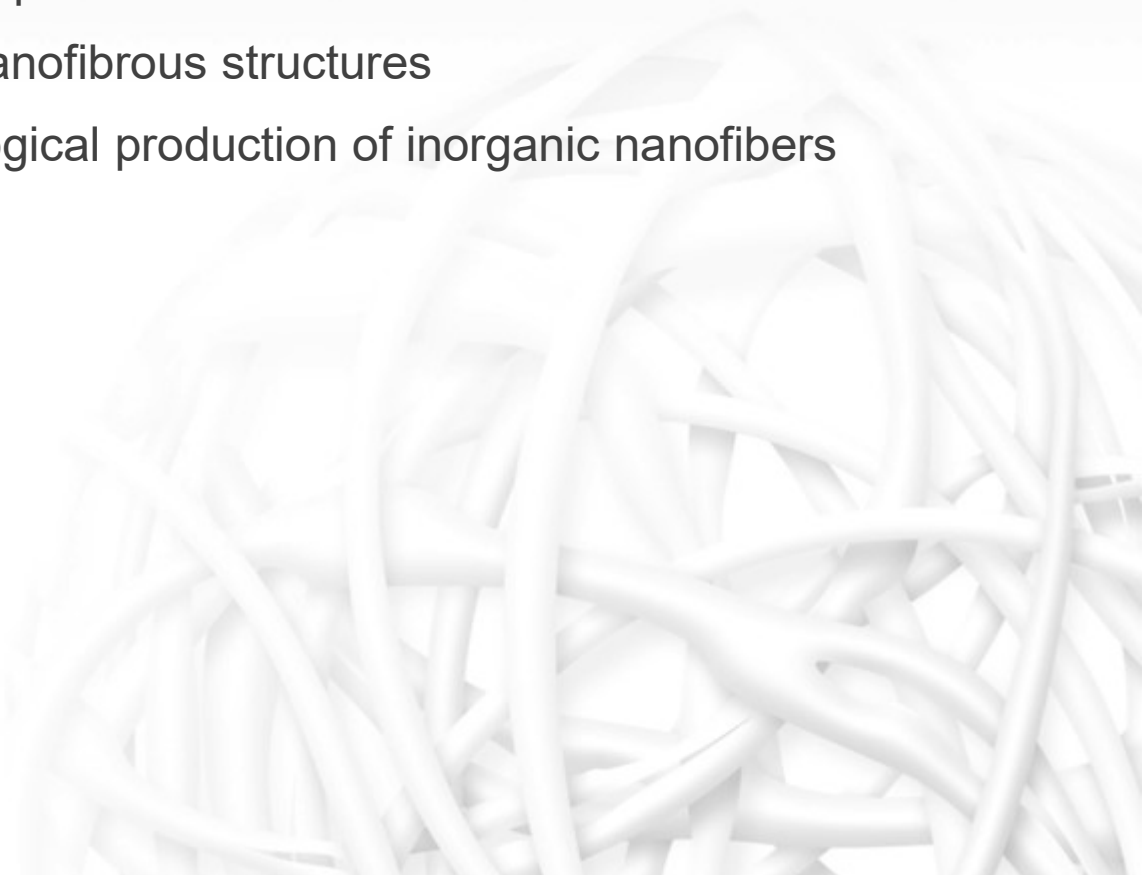
Implemented projects

Partnerships



UNIQUE TECHNOLOGY – centrifugal spinning

- 17x more efficient than Electrospinning
- Easier control of production parameters
- Possibility to produce 3D nanofibrous structures
- More economical and ecological production of inorganic nanofibers
- Technology variability



UNIQUE MATERIALS – broadest product portfolio from a global point of view

NnF CERAM[®]

Inorganic nanofibers

SiO₂, Al₂O₃, ZrO₂, CeZrO₄,

TiO₂, WO₃, Y-ZrO₂, LTO, SBTO,

Cotton-like 3D structures – globally unique

Powder-like structures – globally unique

NnF MBRANE[®]

Polymer nanofibers

PA6, PUR, PVDF, PAN, PVA,

PVB, PCL, PHB, PET

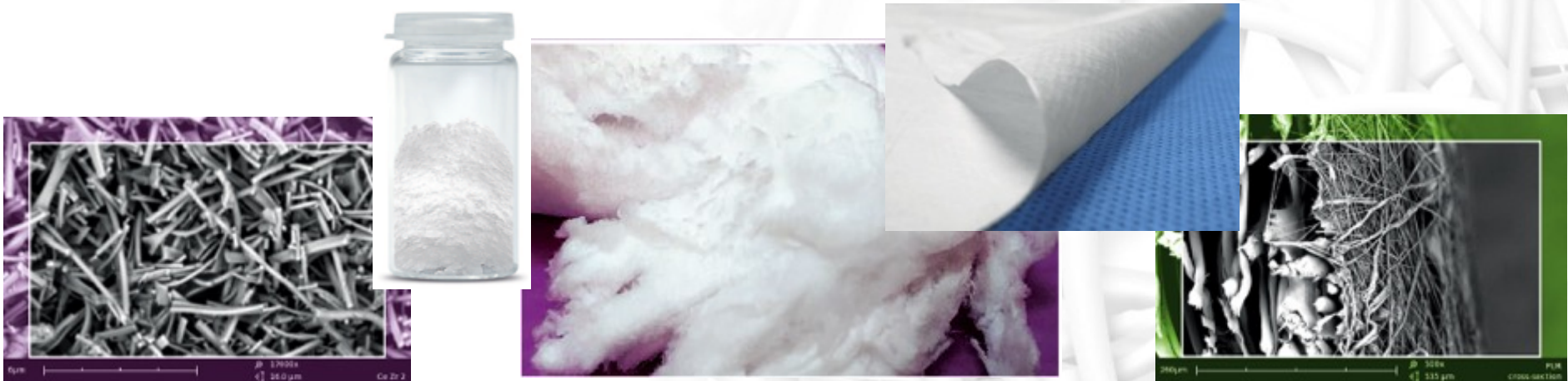
POLYSACCHARIDES ...etc

Polymer nanofibrous 3D structures

– globally unique

Polymer membranes

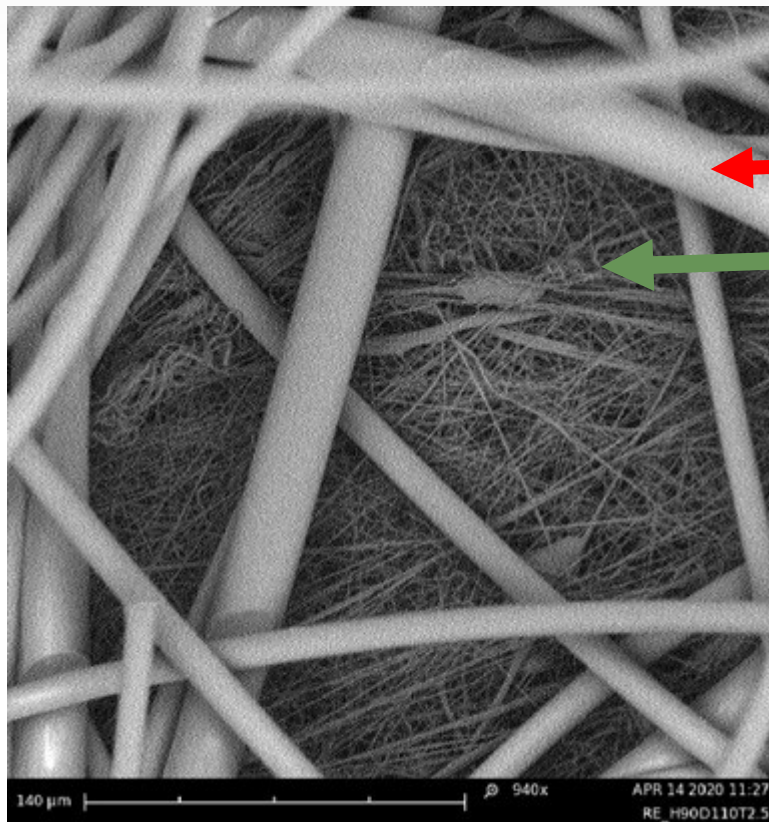
ALL MATERIALS CAN BE FUNCTIONALIZED BY DIFFERENT NANOPARTICLES



COVID-19 PROTECTION MATERIAL

NnF MBRANE[®] - **BreaSAFE PA6** – nanofiber based membrane

Unique nanofiber based, long lasting, durable membrane with high filtration efficiency (up to 99% ~ FFP3)



PP/PES SPUN-BOND FIBERS

NnF MBRANE- **BreaSAFE** PA6 nanofibers

HIGH FILTRATION EFFICIENCY: 94 - 99%

LOW PREASSURE DROP: 50 - 200Pa

HIGH DURABILITY: keeps filtration efficiency after washing!

Membrane can be used for production of various types of PPE

COVID-19 // PERSONAL PROTECTION EQUIPMENT

 **BreasaSAFE**

FILTER

- Various dimensions
- Washable (up to 30 cycles)
- Ultrasound laminated

Can be used in

- Pocket face masks
- Neck qaiter



 **BreasaSAFE**

FFP3 CLASSIC

- Non-valve
- Ergonomic
- Multi-use – 14 cycles
- Light
- Comfortable
- Best FIT FACTOR
- TWO WAY protection (in/out)



 **BreasaSAFE**

FFP2 COMMUNITY MASK

- Light
- Washable
- Comfortable
- Kids sizes
- BLACK/BEGGE/WHITE



PRODUCTION CAPACITY NnF MBRANE - BreaSAFE

MEMBRANE PRODUCTION

centrifugal spinning process
production width – 60cm
production speed – 0-8m/min

3 production machines

150 000 m² / months / 3 shifts / 22 days



PRODUCTION CAPACITY - BreaSAFE PPE products

FINAL PRODUCT PRODUCTION

FFP3 RESPIRATOR - MOLDING MACHINE

FFP2 RESPIRATORS - CUTTING MACHINE

FFP3 RESPIRATOR – 800 000 / MONTH

FFP2 RESPIRATOR – 1 000 000 / MONTH



FIBER _{nano} FLOW

DIY NANOFIBERS

HAND HELD – SPINNING DEVICE
DEPOSITING NANOFIBERS ON VARIOUS SURFACES
OPERATED BY NON EDUCATED PERSON

- SUN BURNS
- COSMETIC
- SKIN RUSH
- ACNE

- FACADES
- PLANTS ...

YOU BUY

- 1) DEVICE
- 2) POLYMER CAPSULE - **YOU ARE WELCOME**

YOU SPIN





NANO4FIBERS
PARDAM



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