



Têxteis de Elevada Performance – Desafios Para a Indústria e Para o Engenheiro

XX Congresso Nacional da Ordem Dos Engenheiros
Alfândega do Porto – 17 Outubro -2014

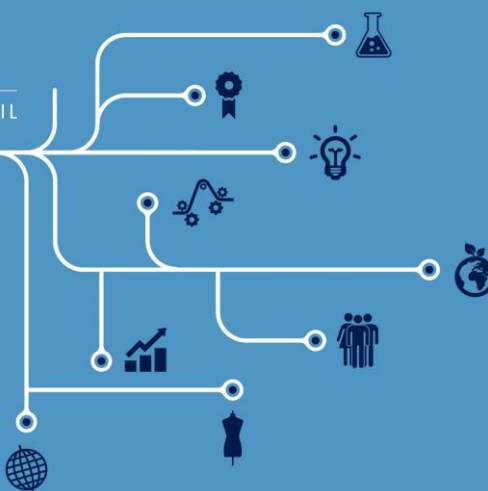
Helder Rosendo (hrosendo@citeve.pt)

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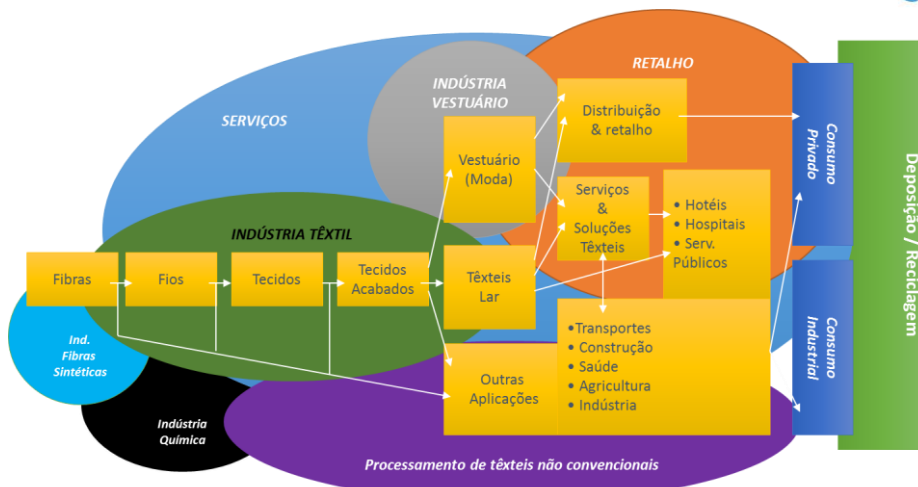
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**Technology-Driven
Solutions for Industry**



Um sector complexo

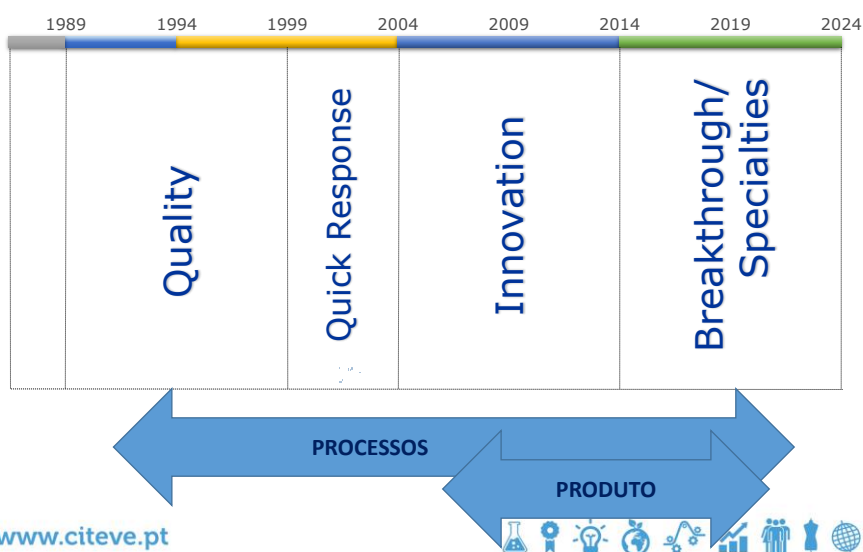


Fonte: ETP

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A ITV Portuguesa

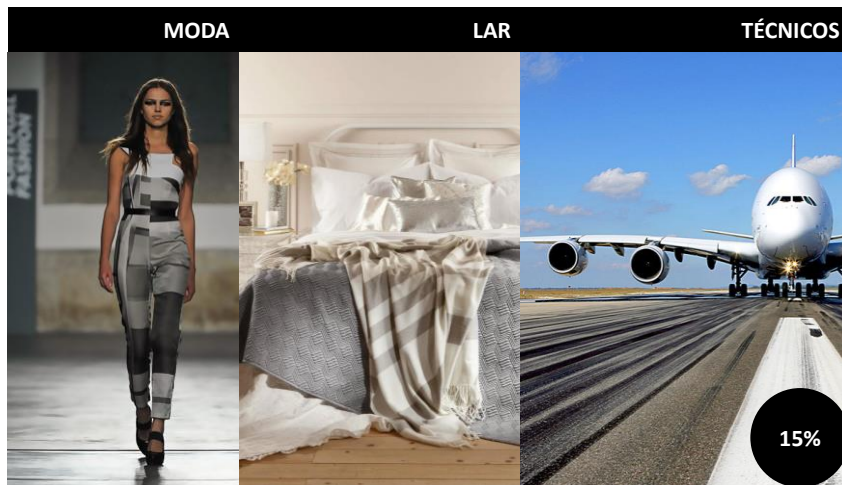


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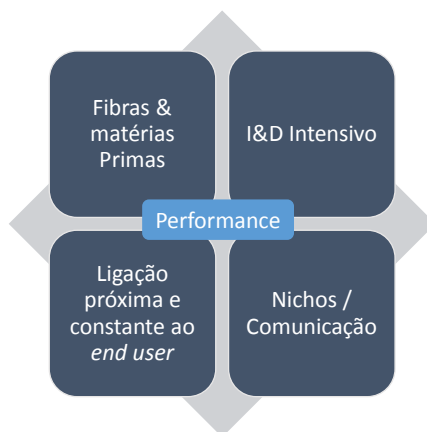
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Mercados TT

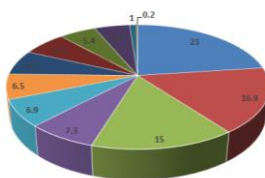


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Mercados Têxteis Técnicos

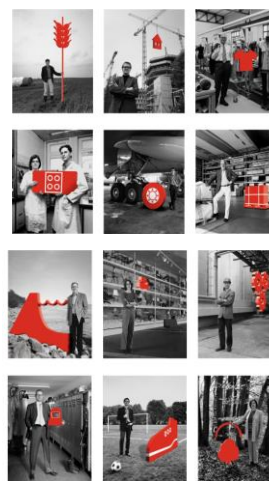


Technical textiles market segmentations (2010)

■ Mobiltech ■ Indutech ■ Sportech ■ Buildtech ■ Homotech ■ Clothtech
 ■ Meditech ■ Agrotech ■ Protech ■ Packtech ■ Geotech ■ Oakotech

WORLD TECHNICAL TEXTILE MARKET STRUCTURE - 2011		
2011	Mt	Billion USD
Technical textiles	25.0	133
Non woven	7.6	26
Composites	8.0	94
Total	40.6	253

Source: INDA, Freedonia Group, IFAI, JEC

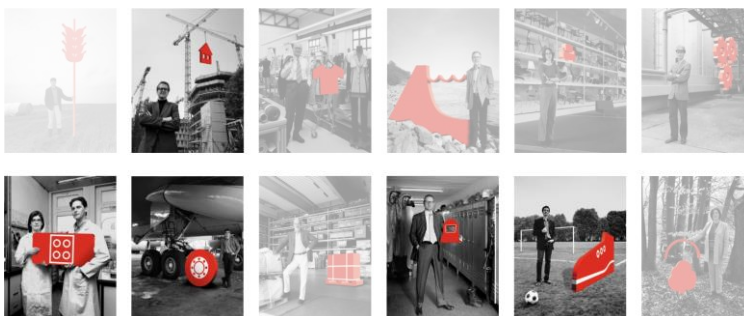


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Mercados estratégicos



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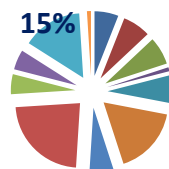
desporto & lazer

Funcionalidades:

- Aquecimento/Arrefecimento Activo
- **Regulação da temperatura corporal**
- Propriedades anti-estáticas
- Absorção/Neutralização de Odores
- Impermeabilidade
- Compressão Graduada
- Protecção e Resistência à radiação UV
- Elasticidade e fitting extremo
- Secagem rápida/Limpeza fácil

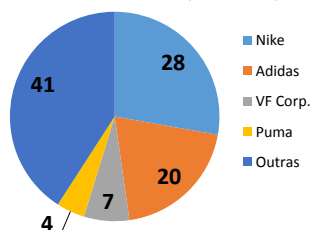
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Parcela do Consumo
Têxteis Técnicos (TT)



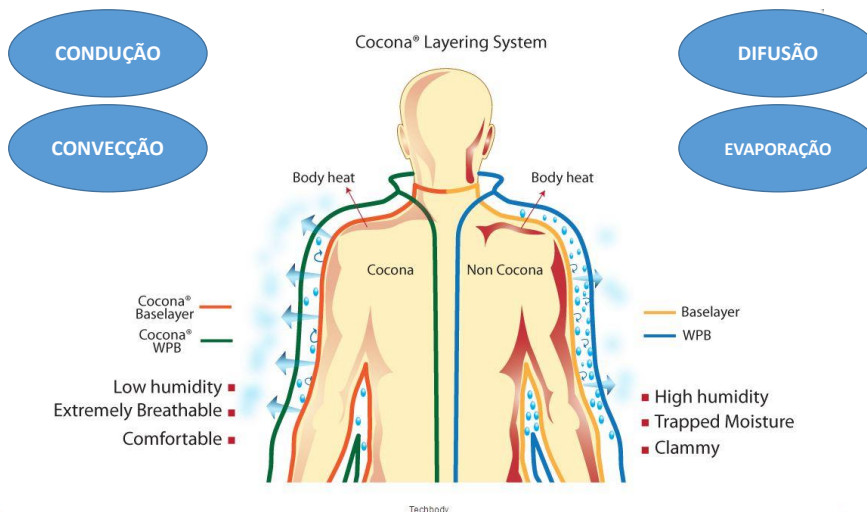
■ AGROTECH
■ BUILDTECH
■ CLOTHTECH
■ GEOTECH
■ HOMETECH
■ INDUTECH
■ MEDTECH
■ MOBILTECH
■ PACKTECH
■ PROTECH
■ SPORTTECH

Market Share Worldwide % (2013/2014)





Conforto x Performance

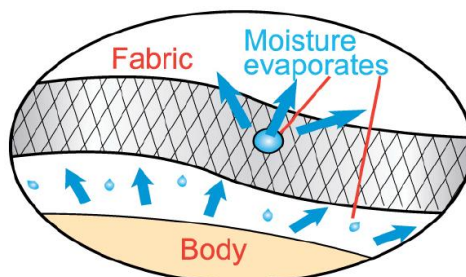


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Conforto x Performance

Figure 1
Moisture management in clothing



Source: www.henselite.com.au

Difusão +
Evaporação

Difusão

Absorção

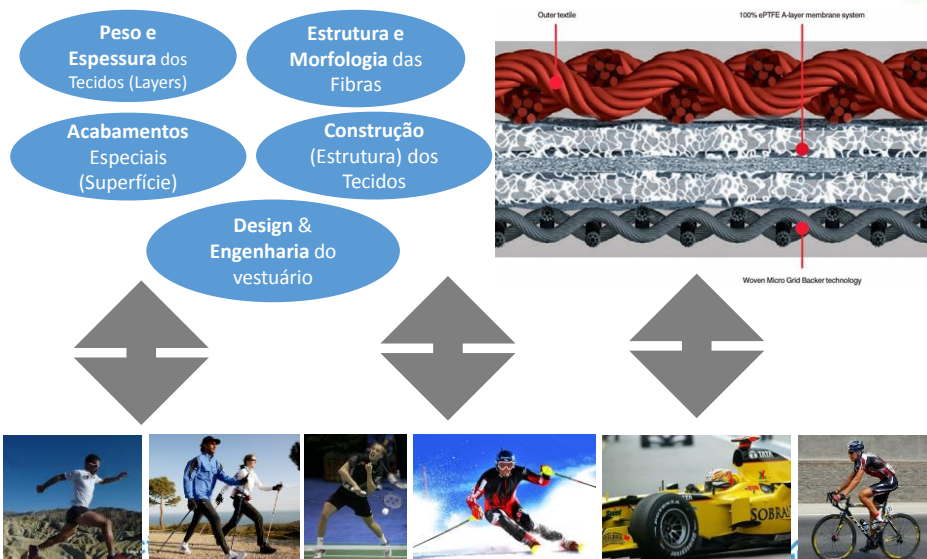


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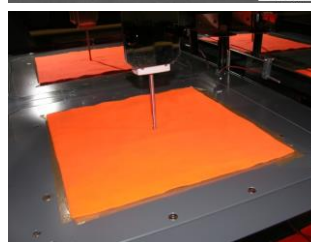
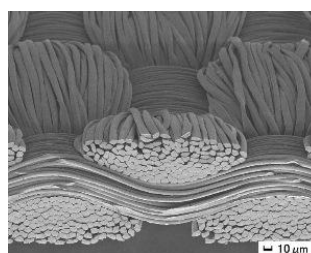


Factores com Influência



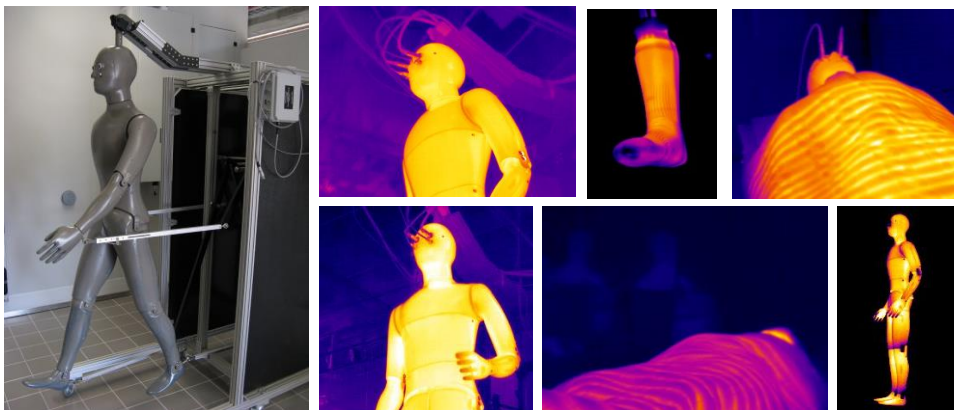
Normas de Ensaio

- ✓ AATCC – 195-2011 Liquid **Moisture Management** Properties of Textile Fabrics
- ✓ AATCC – 79-2010 **Absorbency** of Textiles
- ✓ AATCC - 201-2012 **Drying rate** of Fabrics:
- ✓ ASTM D737-(04)2012 **Air Permeability** of Textiles
- ✓ EN20811/ISO811 **hydrostatic pressure** method for determining the resistance of fabrics to penetration by water
- ✓ ISO11092:1993 Measurement of The **Thermal and Water-Vapour Resistance** on steady-state conditions
- ✓ ASTM E96/E96-M 05 **Water Vapour Transmission** of Materials
- ✓ ASTM F2370 – **Evaporative Resistance** of Clothing Using a Sweating Maneking





Manekin Térmico & Respirável



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Testar/Medir & Comunicar

MVTR (Moisture Vapour Transport Rate)
g/m²/24h

RET (Resistance to Evaporative Transfer)
m²Pa/W

Coluna De Água (Hydrostatic Head)
Resistance of fabrics to penetration by water
mm / (1.000 mm = 9,8 KPa)



Coluna D'água
15.000 mm

Peso
76 g

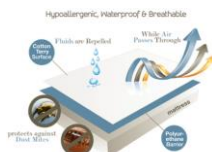
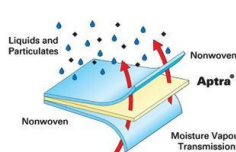
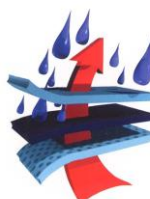
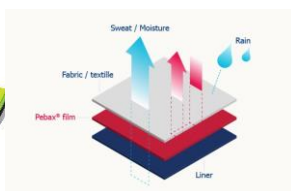
MVTR
10.000g/m²/24h

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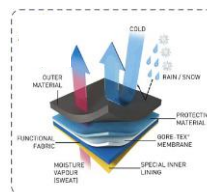
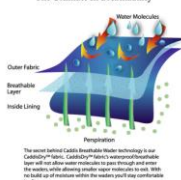




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Grandes Desafios

- Interdisciplinaridade
- Normas/Standards
 - Materiais
- Tratamentos de Superfície
- Compreender e envolver o utilizador final/Integrador no desenvolvimento de produto
 - Produto/Processo



- Parcerias & Co-Desenvolvimento
- I&D
- IPR
- Feiras de mercados de aplicação/complementares
- Comunicação Produto (Tecnidade/MKT)
- Persistência





Obrigado!

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