

grass



the essential component

BONARYARNS



# Bonar Yarns - Who are we?

- ⌋ Low & Bonar PLC
  - ⌋ Quoted at London Stock Exchange
  - ⌋ Turnover approx. EUR 600m
  - ⌋ Over 2,700 employees worldwide
  - ⌋ Low & Bonar consists of two divisions:
    - ⌋ Bonar Technical Textiles
    - ⌋ Bonar Floors

# Bonar Floors



# Bonar Technical Textiles

- Woven and non woven agrotextiles, geotextiles, construction fibres
- Automotive, industrial and flooring fabrics and composites
- Technical coated fabrics





# Bonar Yarns

- Manufacturer of synthetic yarns (turf, carpet backings) since 1960
- 300 employees
- 2nd biggest turf yarn producer worldwide
- Production: Dundee (Scotland), Ostend (Belgium), China (Yizheng) and Abu Dhabi (shortly)
- Logistic Centre in Asheville (NC) USA



# Bonar Yarns

- Full range of yarns for sports and landscape markets
- Advanced yarn technologies
- Modern manufacture, excellent service, quality products
- Member of all major branch organisations



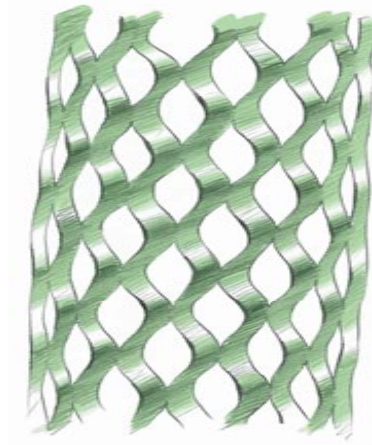
# Grass Development Centre

- ⌋ Dedicated R&D organisation
- ⌋ Polymer extrusion development
- ⌋ Processing development
- ⌋ Yarn characterization
- ⌋ Use of Colbond facilities



# Structures - Fibrillated yarns (Bonaslide, Bonasoft)

- ↳ Molten polymer, color masterbatch
- ↳ Extrusion of film and slitting
- ↳ Honeycomb structure
- ↳ Twisting
- ↳ Winding





# Structures - Monofilament yarn (Bonafil, Bonablade)

- ↳ Molten polymer and masterbatch
- ↳ Extrusion of individual filaments
- ↳ Combination of filaments
- ↳ Twisting
- ↳ Winding



## Structures - Hybrid (Bonaffusion)

- ㄥ Molten polymer and masterbatch
- ㄥ Extrusion of film and slitting
- ㄥ Precision incisions
- ㄥ Twisting
- ㄥ Winding



# Structures - Knitted Yarns (Bonakurl)

- ㄣ Molten polymer and masterbatch
- ㄣ Extrusion of film and slitting
- ㄣ Precision incisions
- ㄣ Twisting
- ㄣ Winding
- ㄣ Knit and de-knit process
- ㄣ Heat set 'spring' memory
- ㄣ Non-directional, true surface



# End use requirements related to yarn properties

Rotational Friction

Comfort

Durability

Aesthetics

# Yarn Interaction

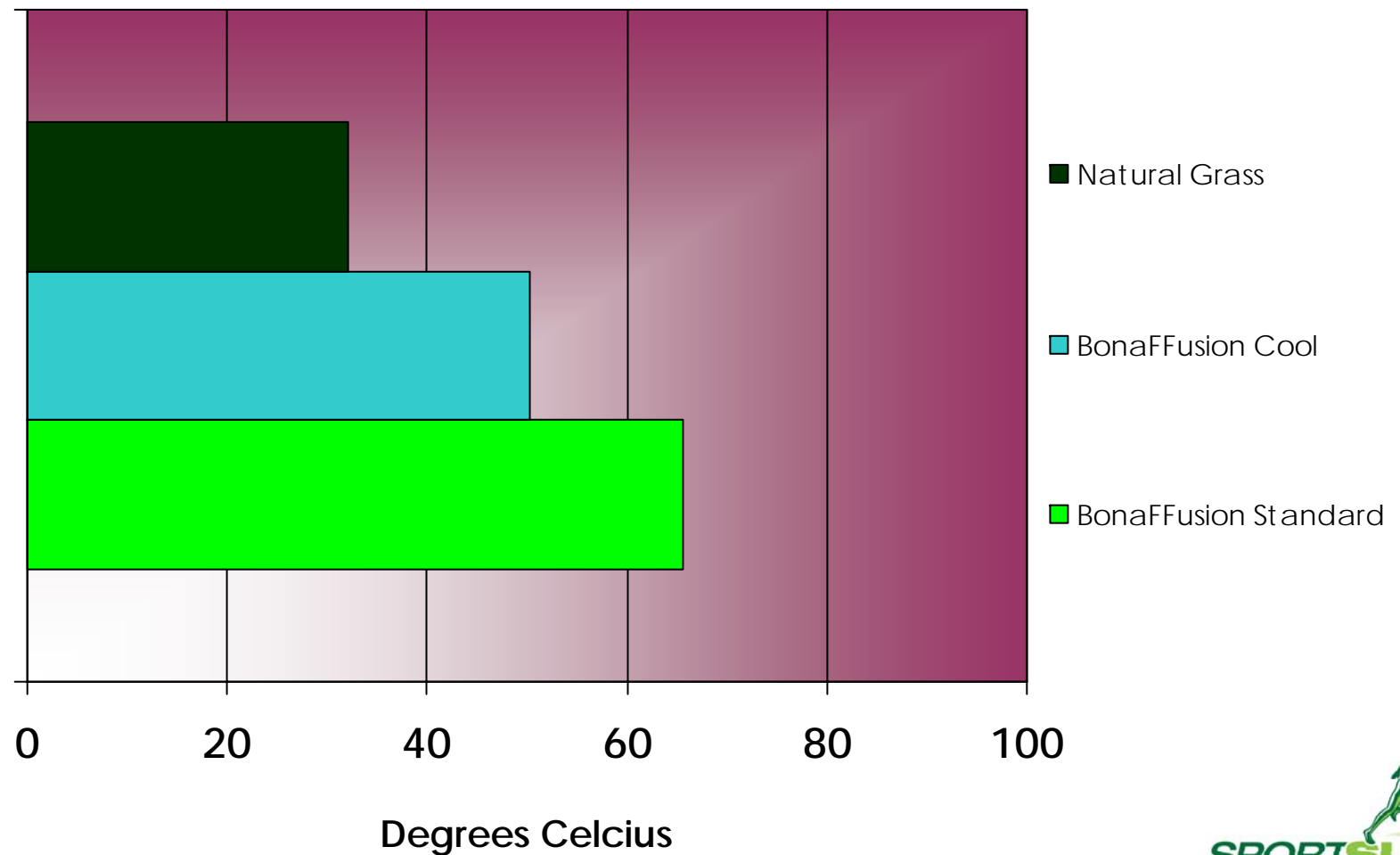
- ㄥ Rotational Friction
  - ㄥ Thatch layers
    - ㄥ Knit de-knit yarns
    - ㄥ Texturized yarns (steam, hot air, mechanical treatment)
- ㄥ Comfort
- ㄥ Durability
- ㄥ Aesthetics

# Yarn Interaction

- ㄥ Rotational Friction
- ㄥ Comfort
  - ㄥ Abrasiveness
    - ㄥ Polymers / blends
  - ㄥ Infill splash
    - ㄥ Fibrillated yarns
    - ㄥ Hybrid yarns
  - ㄥ Surface temperature
    - ㄥ Cool Grass
- ㄥ Durability
- ㄥ Aesthetics

# Cool Grass - Surface Temperature

OUTDOOR SURFACE TEMPERATURE STUDY (Phoenix, Arizona, July 2007)



# Yarn Interaction

- ㄥ Rotational Friction
- ㄥ Comfort
- ㄥ Durability
  - ㄥ Color fastness, UV stability
    - ㄥ MB specification
    - ㄥ UV stabilizer selection
  - ㄥ Ball roll -> Resilience
    - ㄥ Polymers / blends
    - ㄥ Cross sections (monofilaments)
- ㄥ Aesthetics



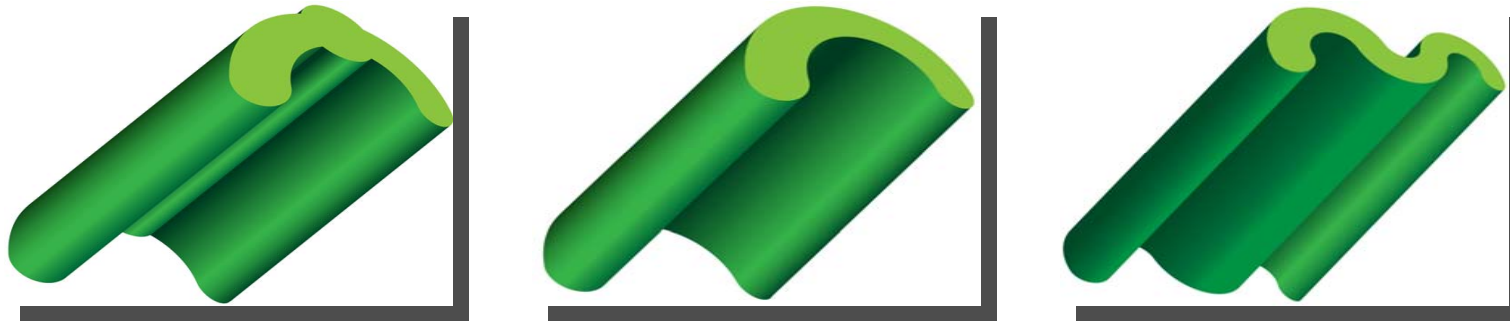


# Yarn Interaction

- ㄥ Rotational Friction
- ㄥ Comfort
- ㄥ Durability
- ㄥ Aesthetics
  - ㄥ Yarn types: fibrillated, monofilament, hybrid
  - ㄥ Yarn type combinations
  - ㄥ Colour and colour combinations
  - ㄥ Cross section of monofilament (coverage)

# Market Trends for Turf Yarns

- ⌋ More colour combinations giving fields a more natural look
- ⌋ Combinations of monofilament types
- ⌋ More different cross sections in monofilament



- ⌋ More combinations of yarn types, e.g. monofilament + hybrid
- ⌋ Thatch layers (partially) replacing infills

# Market Trends for Turf Products

- ㄥ Reduction or replacement of SBR infill
  - ㄥ Replacement by text. yarn or other infills
- ㄥ Alternative bonding methods
  - ㄥ Weaving
  - ㄥ Ultrasonic bonding
  - ㄥ Heat bonding
- ㄥ Systems recycling
- ㄥ Modular, mobile systems
- ㄥ Reduction of pile height
- ㄥ Increased use of shock pads

thank



you