

INNOVATION IN ARTIFICIAL TURF

INNOVASJON INNEN KUNSTGRESS





LEADERS IN ENVIRONMENTAL INNOVATION

- Flooring expert for 150 years
- Innovator in turf since 1994
- +25 000 sports fields worldwide
- +1500 fields produced per year
- Full vertical integration
- Leaders in environmental innovation



**ALL ARTIFICIAL TURF IS GREEN
WHAT POSSIBILITIES ARE THERE
TO INNOVATE?**

TURF SYSTEM DESIGN

YARN

- Polyethylene
- Additives

PERFORMANCE INFILL

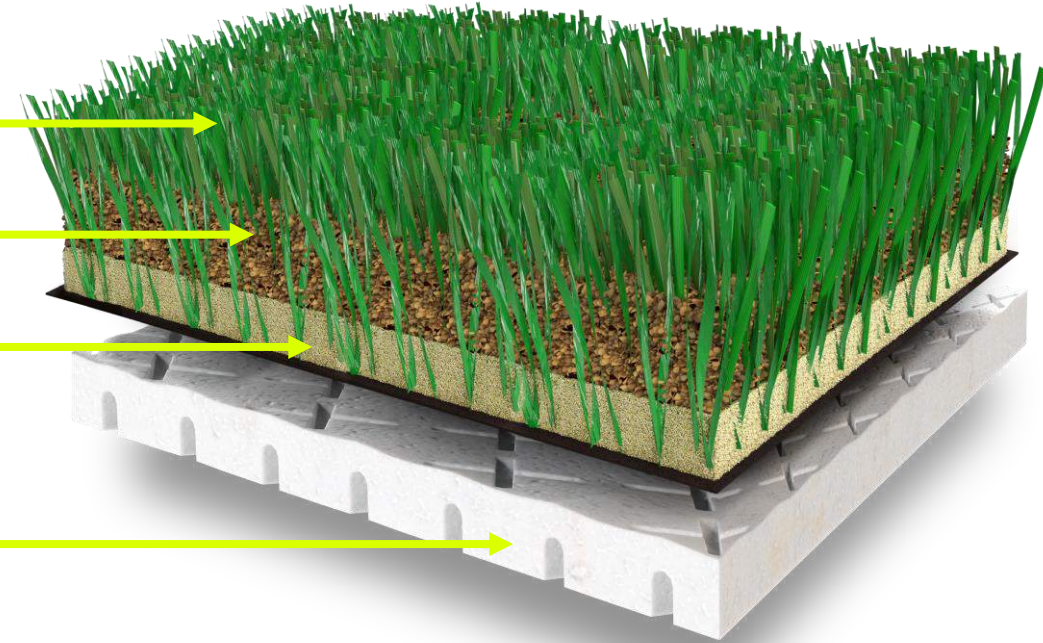
- Microplastic infill (SBR, EPDM, TPE)
- Alternative infills (cork, olives)

STABILISING INFILL

- Sand layer

SHOCKPAD

- Attenuation of impacts
- Reduction of infill quantities
- Maintaining sports performance



YARN QUALITY CRITERIA

- Comfort and Safety for the Player
- Low Skin Friction
- Good resilience – ball roll
- Softness
- Durability and long lasting performance
- Mechanical Wear Resistance
- Sports technical performance
- Weatherability
- Resistance to UV, Heat, Rain



YARN INNOVATION

RAW MATERIAL

Polyethylene, type and quality of polyethylene have an influence on softness and resilience

- Resistant material to prevent loss of secondary microplastics
- Replacement of virgin polyethylene by recycled polyethylene to save resources and reduce carbon footprint
- Use of polyethylene made from plastic waste certified by ISCC

SHAPE

No major innovations diamond shape of fiber is the most resistant shape

Influence of shape on loss of secondary microplastics

THICKNESS OF YARNS

Between 360 and 450 microns for wear resistance

STABILIZERS AND ADDITIVES

UV stabilization is key for a durable field over time, prevents loss of secondary microplastics



YARN INNOVATION - CONCLUSIONS

- Innovation is mainly related to save fossil resources and produce long lasting performant yarns
- Innovation related to yarns is not necessarily visible but has a big impact on sustainability and return on investment
- Key quality criteria of yarns are sometimes overlooked
- Paying less results in less durable products

INFILL INNOVATION

ANYTHING AS GOOD AS SBR !!!!

- Durable
- UV resistant
- Elastic
- Cheap
- Not floating
- Huge capacity and availability

INFILL QUALITY CRITERIA

2012 FIRST FIELDS WITH CORK INFILL

- Besides UV resistance and elasticity nothing in common with SBR
- BUT heat reduction and comfortable to play on
- Since then continuous innovation

2018 OLIVE PITS, FIFA QUALITY CERTIFIED SYSTEM

- Many attributes in common with SBR BUT not elastic
- Copied by many with sharp olives with too big grain size

2022 CORN COB INFILL, FIFA QUALITY PRO CERTIFIED SYSTEMS

- Not SBR but playing comfort is getting close

NATURAL INFILLS

PUREFILL - CORK



- + Elastic
- + Not rotting
- + Hydrophobic
- + Long experience
- + Renewable
- Floating
- Migration during heavy rains
- Static charging
- Dust
- Different densities and qualities!

PUREGRAIN - CORN



- + Does not float
- + Sports performance
- + Dust Free
- + Renewable
- Installation
- Watering
- Different qualities

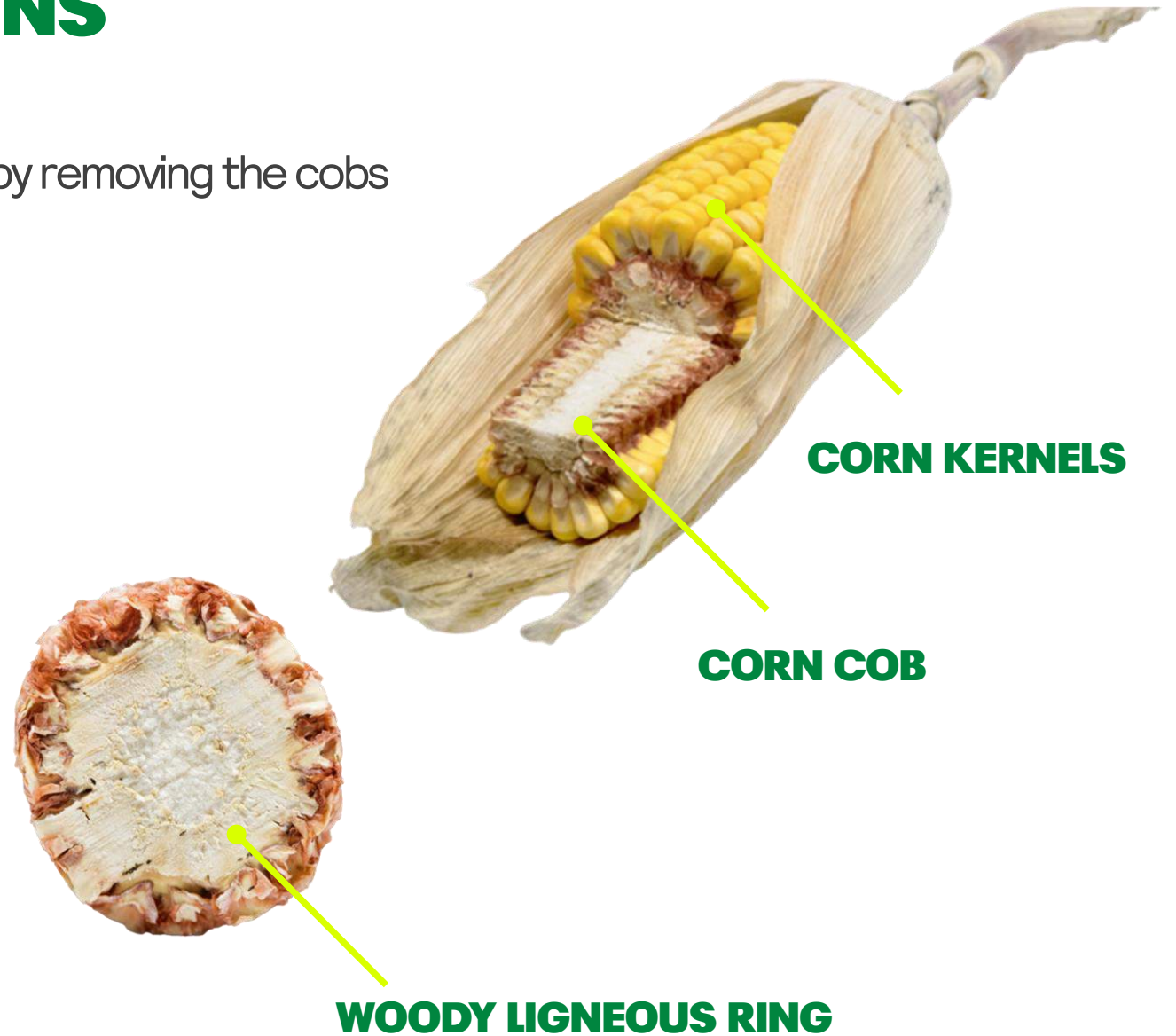
PURESELECT - OLIVES



- + Does not float
- + Large availability
- + Low maintenance
- + No irrigation
- Not elastic (special shockpad)
- Availability related to harvest
- Quality to avoid abrasion

PUREGRAIN CORN - ORIGINS

- Agricultural by-product for seed manufacturing by removing the cobs
- Produced in Europe from 100% seed corn
- Usage of corn cobs:
 - Animal health and nutrition
 - Pharmaceutical industry
 - Cosmetics industry
- Made from the ligneous belt of the corn cob



CASE STUDY - HELSINKI



***“In my opinion,
these are the
best fields that
have ever been
installed in the
whole of
Finland”***

City of Helsinki, August 2024

INFILL INNOVATION – prEN 15330-5 standard

Specification for infill materials used with synthetic turf surfaces

- EN 15330-5 to be published in Q4 – 2024 latest Q1 – 2025
- Specifies minimum performance and durability requirements for infill materials and reclaimed infills
- Includes classification of infill materials
- Allows to measure and compare the performance of an infill
- **Main requirements:**
 - Classification of elastic properties (energy return after compression)
 - Resistance to wear, minimum 500 cycles
 - Toxicology (PAH, Ecotoxicity, heavy metal content (EN 71-3))
 - UV, Permanent Agglomeration, Surface temperature (Heat)
 - Dust content (low or very low)
 - Resistance to freeze and thaw



INFILL INNOVATION - CONCLUSIONS

- Use of infill means less use of yarns – saving fossil resources and carbon
- Dual fiber and dense systems keep infill inside the field and avoid loss
- The new EN 15330-5 standard will help to make an educated choice of the infill
- There will always be a trade-off compared to SBR – but we are continuing to innovate

SYSTEM DESIGN INNOVATION

NON INFILL SYSTEMS – NO CERTIFICATION FQ/FQPRO

- Installed in Switzerland since 2008 and widely available but little demand elsewhere
- Clamping required for installation
- Yarn weight > 3 kg/m²
- Fibers replace the role of the infill



RECYCLABILITY

MAINTENANCE

PERFORMANCE

DURABILITY

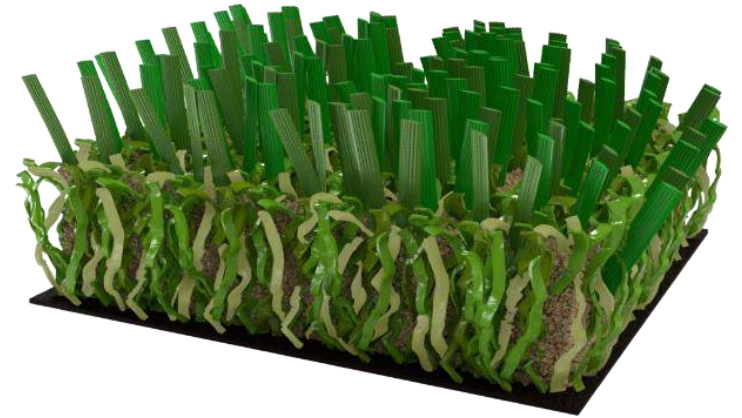
CARBON FOOTPRINT

PRICE

SYSTEM DESIGN INNOVATION

MINERAL STABILIZED SYSTEMS - NO CERTIFICATION FQ/FQPRO

- Introduced by FieldTurf in Norway in 2018 (Purefield Ultra systems)
- Sand used to install without clamping and allow easy snow removal, sand not visible
- Yarn weight between 2 kg/m² and 3 kg/m²
- Innovative combination of fibers with different functions and antistatic additive



MAINTENANCE

DURABILITY

(DEPENDING ON YARN)

PERFORMANCE

CARBON FOOTPRINT

PRICE

SYSTEM DESIGN INNOVATION

SAND INFILLED SYSTEMS - NO CERTIFICATION FQ/FQPRO

- Introduced in Germany in 2018, clubs no longer received subsidies for microplastic systems
- Many combinations available but sand grade and maintenance are important to avoid compaction and slipperiness
- Yarn weight between 1.5 kg/m² and 2 kg/m²



PRICE

PERFORMANCE

DURABILITY

REFERENCES - CLAIREFONTAINE



- Training Centre
- French National Teams
- Vertex Quattro 42mm
- PureFill cork infill



REFERENCES - MADRID



- Training Centre
- Spanish National Teams
- Vertex Quattro 42mm
- PureGrain corn infill



REFERENCES - STOCKHOLM



- Spånga, Stockholm
- PureCurl
- Non-infill technologym



REFERENCES



LOSC (FR)

- Training field
- Pro football
- Vertex Core 42-13
- PureGrain infill



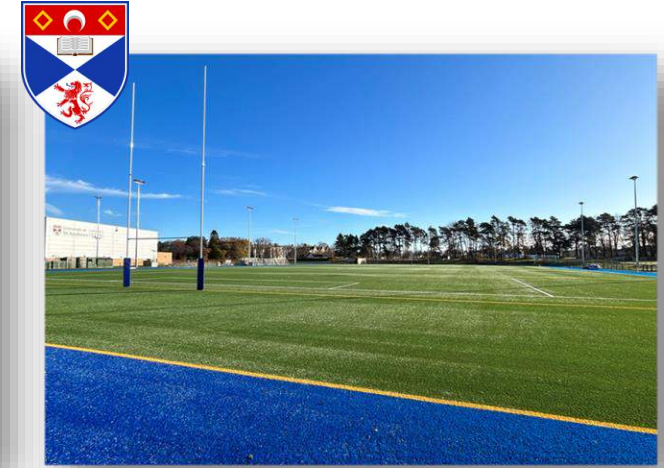
STADE MONTOIS (FR)

- Stadium field
- Pro rugby
- Vertex Core 60-11
- PureFill cork infill



REAL BETIS (ES)

- Training complex multiple fields
- Pro football
- XM7 40-13
- PureFill cork infill



ST ANDREW'S UNIVERSITY (UK)

- Principal campus sports field
- University rugby
- Vertex Core Prime 60-11 ISCC Plus
- PureFill cork infill

CONCLUSION

- Yarns will become even “Greener” by reducing fossil resource and lowering the carbon footprint
- Alternative infills are available but not suitable for all regions
- Turf systems will evolve to prevent loss of secondary microplastic

THANK YOU

TAKK

