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NATHPRO:

Development of NATural fiber High performance pultrusion PROfiles

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project coordinator ir. Daan van Rooijen
KIEM sustainable innovations

founded in 1992 and initiates and realizes projects for sustainable product innovations for industry.

BIOCOMPOSIETEN

BIOPOLYMEREN

BIOPREGS

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Project partners

- **DLR Braunsschweig (D) Institute of Composite Structures and Adaptive Systems,**
- **Prince Fibre Fiber Tech B.V (NL) producer of profiles according a pultrusion system.**
- **Sachsenleinen GmbH (D), producer of natural fibre textile products of flax and hemp fibers.**
- **Dynea Austria Gmbh GmbH (A) manufacturer of resins, adhesives & hardeners for wood based applications.**

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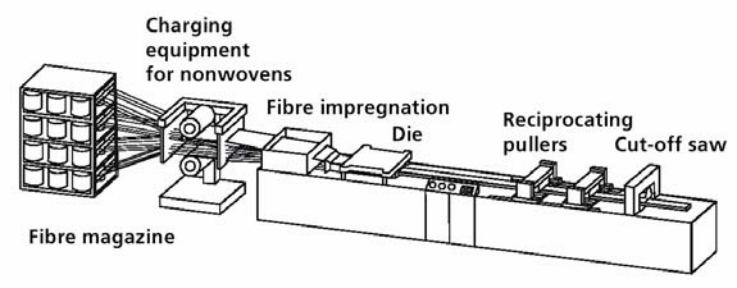
Objectives

- **Development of design and construct knowledge**
- **Development of (bio)resin- fibre systems**
- **Development an industrial production method**
- **Knowledge transfer to industry**



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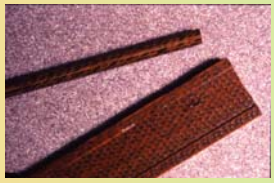
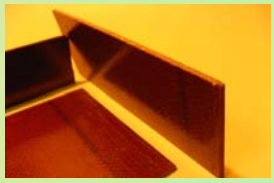
Objectives

- **Replacement for hardwood, plastic and metal**
- **At least 20% better performance**
- **20 % cheaper in meter price**
- **At least 40% lower eco-impact**

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Method / work plan

- **WP 1. Material, product, and process definition**
- **WP 2. Research of fiber/matrix systems**
- **WP 3. Research of a NATHPRO pultrusion process**
- **WP 4. Research of composite design and construction engineering methods**
- **WP 5. Development and testing of prototypes of NFP products.**
- **WP 6. Knowledge transfer**

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Current project status

- Halfway WP 2 with delay in startup
- Specification and list of potential applications
- Pre-selection of suitable resins
- Pre-selection of suitable fibre products
- First trials with jute yarns for O-measurement
- Plans for research for controling parameters
- Eco-design method for selecting applications

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Expected results

- Half the price/performance of HPL
- Lighter then HPL
- As strong as aluminium
- As stiff as glass fibre pultrusion
- Cheaper then glass fibre pultrusion
- Greener then wood

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Introduction of the speaker

- **Delft University**
  Industrial engineering and design
- **1990 – 1992: R&D manager in furniture industry**
- **KIEM innovations founded in 1992**
- **R&D projects in sustainable energy and renewable resources like bio-plastics, natural fiber composites and wood.**
- **Projects with Ahrend, DAF Trucks, Ministry of Transport and Volvo Car and with many SME's**

ir. Daan van Rooijen