TECHNOLOGY LICENSING

ENGINEERING SERVICES

PLANT CONSTRUCTION

IDEAS INSIDE

ENGINEERING & TECHNOLOGIES

Lyocell Technology

Cellulose Fiber made from dissolved, regenerated pulp

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EPC Group is certified per DIN EN ISO 9001

Natural Fibers – From Forest to Designer Shop.

EPC Group as part of the German Lyocell Alliance offer a turn-key solution for environmentally and economically sustainable Lyocell production plants. The Lyocell Alliance offers the opportunity to produce Lyocell for textile as well as technical applications e.g. as raw material for the Carbon Fiber Production.

IDEAS INSIDE

A MEMBER OF EPC GROUP

Made from Wood - General Properties of Lyocell

Application of Lyocell and a short overview of the Lyocell Industry

Lyocell is an eco-friendly fiber widely used in the apparel market. It is made from naturally occurring cellulose obtained from sources such as eucalyptus, spruce or bamboo. Material produced from Lyocell is popular for many textiles due to the attractive properties it possesses, e.g. high strength and good moisture absorbance.

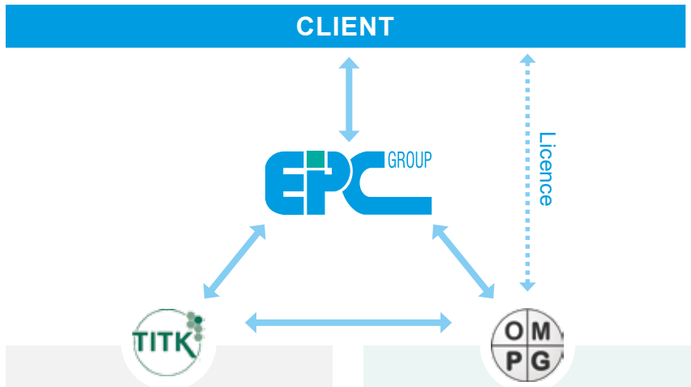
EPC together with its partner 'OMPG' form the German Lyocell Alliance. The alliance has proprietary know-how and experience in the design and build of efficient and environmentally responsible Lyocell production plants. EPC works together with each client to ensure that the desired Lyocell specification can be achieved. The Lyocell production plant will be designed to operate as efficiently and economically as possible and to surpass all environmental requirements.

HISTORY OF FABRICS DERIVED FROM CELLULOSE:

- **2012** EPC join the german lyocell alliance
- **2005** OMPG lyocell project China | 1000 T/A
- **1999** TITK lyocell project together with EPC engineers Germany | 500 T/A
- **1980** Lyocell R&D begins at TITK, Germany
- **1950** TITK Research Institute is established in Germany
- **1889** Lyocell is commercially produced in France as artifical silk
- **1855** Swiss chemist George Audemars is granted a patent for cellulose fabric

THE GERMAN LYOCELL ALLIANCE

EPC together with OMPG and TITK found the german lyocell alliance and can offer a turnkey solution for lyocell plant construction



Thuringian Institute of Textile and Plastics Research

Founded in the 1950`s TITK is an internationally recognized institute.

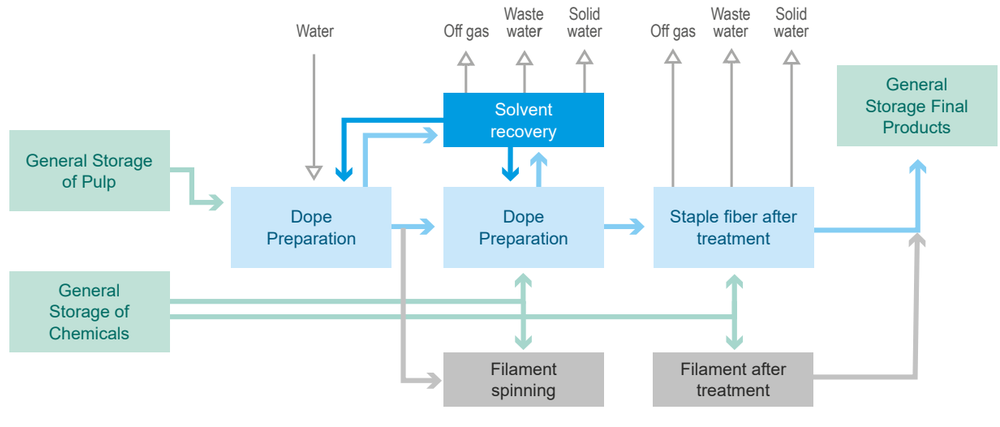
TITK has developed its Lyocell Technology based on over 20 years of intensive scientific research and development.

East Thuringian material testing company for Textile and Plastics

Founded in 2005, OMPG develops and manufactures special filaments for various applications.

OMPG bridges the gap between labscale facilities and the development of commercially operationally plant.

Lyocell Production Process



Advantages of EPC plant design and OMPG Lyocell Process

- Process safety – Low temperature: ≤ 100 °C
- Increased efficiency in energy consumption
- High solvent recovery rate (up to 99,5 % possible)
- Adjustable Plant capacity (50 -100%)
- Flexible Design – variable stable fiber lengths and fineness or Filament yarns
- Enzyme preconditioning step – Purification, smooth system operation

Attractive properties of lyocell

- Environmentally sustainable
- Moisture absorbent
- High dry tenacity (strength) - Close to that of polyester
- High wet tenacity - Retains 85% of its strength when wet
- Low shrinkage after washing
- Non- fibrillating versions of Lyocell are also available
- Special applications/ filling of Lyocell fibre available

LYOCELL RAW MATERIALS

Cellulose Pulp obtained from
Bamboo, spruce, pine, eucalyptus, beech, etc.

Process for pulp manufacturing
Sulfite-, pre-hydrolysis-sulfate process

The key solvent used in the process is NMMO
(N-Methylmorpholine-N-oxide)

Other stabilizers & additives
Required for solution stabilization / bleaching & finishing

Type of packaging
Bale or bobbin

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