

**PRODUCT REDESIGN FOR NATURE  
DEVELOPMENT OF A COMPOSTABLE, ENVIRONMENTALLY FRIENDLY  
UPHOLSTERY FABRIC CLIMATEX® LIFECYCLE™**

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**„Waste equals food“ the visionary concept of the american architect and designer William McDonough was translated into action with the product line Climatex Lifecycle.**

**After their useful life is over, products have to return naturally to the ecosystem and all chemical substances have to biodegrade.**

**Prof. Dr. Michael Braungart, head of the Independent Environmental Institut EPEA in Hamburg, founded by Greenpeace certifies that the product is environmentally sound for humans and the environment.**

**One of the major contents of the compostable upholstery fabric is Ramie, a natural fibre. In the combination with wool the product features of a good humidity absorption and transportation are relating to an excellent climate control seating.**

**A team of 30 at Rohner Textil AG are specialized in the manufacture of high quality upholstery fabrics. Rohner has been certified according to ISO 9001 and ISO 14001 on the European Eco Audit Standard EUVO 1836/93 EMAS.**

## 1. THE SECOND INDUSTRIAL REVOLUTION

The American Designer and Architect William McDonough, Dean of University of Virginia and the Chemist and Chemical Engineer, Prof. Dr. Michael Braungart, former founder and leader of the chemical division of Greenpeace and today head of the independent environmental institut EPEA in Hamburg, Germany developed in 1992 criterias for a definition of environmentally sound products and production aswell as a definition of a concept for „intelligent products“.

### THE THREE PRINCIPLES OF NATURE

3 characteristics can be learnt from **nature and their building of things**:

**a) „waste equals food“**

All materials given to us by nature are constantly returned to the earth without the concept of waste as we understand it. Everything is cycled constantly with all waste equaling food for other living systems.

**b) „use current solar income“**

The factor allowing nature to continually cycle itself through life is energy, and this energy comes from outside the system in the form of perpetual solar income.

**c) „respect biodiversity“**

the creation of biodiversity sustains the complex and efficient system to survive.

### THE INTELLIGENT PRODUCT SYSTEM

The „**intelligent product system**“ consists of two strategies for closing material loops:

**a) „consumable products“** – „organic nutrients“

are defined products being conducted in **biological cycles**:

with natural, renewable resources which document environmental soundness along the whole lifecycle of a product, they are designed to be completely biodegradable and compostable after use.

William McDonough and Michael Braungart state that the word „waste“ should be removed from our vocabulary and the word „product“ should be used instead. **If waste equals food**, it must also be a product.

**b) „service products“** – „technical nutrients“

are defined products being conducted in **technical cycles**.

Rawmaterials of no renewable resources which document environmental soundness along the whole lifecycle of a product, they are designed for disassembly, remanufacture, and continuous re-use.

William McDonough and Michael Braungart quote that the customers only want to buy the service the product provides. To eliminate the concept of waste, service products would not be sold, but effectively **licensed to the end-user**. It is „food“ for an industrial system, because the products are being owned by the productmanufacturers.

**c) „unsalable products“**

are defined as products containing radioactivites, dioxines

William McDonough and Michael Braungart say, that these products must not only cease to be sold, but those already sold should be stored in warehouses when they are finished until we can figure out a safe, non toxic way to dispose them.

## **2. THE STORY**

### **SUSTAINABLE DESIGN, BEYOND RECYCLING**

When the American Designer and Architect William McDonough was requested to design a line of upholstery fabrics for the American company DesignTex, one of the leading fabric suppliers for interiors, he wanted „the next industrial revolution“; that is: Environmental soundness along the whole lifecycle of the product and compostability after use. But which manufacturer could develop such a project? Susan Lyons, the designdirector of DesignTex finally choose the small textile mill Rohner Textil AG in Heerbrugg, Switzerland and the EPEA independent environmental institut as partners.

After the mill was visited by William McDonough in the late fall of 1993 and by Prof. Dr. Micheal Braungart end of 1993 the project started. For a company, it is nearly impossible to change over night from Waste Management practices to Lifecycle Assesst Products.

But environmental homework had already been done by Rohner. In 1992 all environmental problems at the mill were analysed and a schedule of steps to be taken was executed.

The entire product line met already the 1992 **Eco-Tex-Standard 100** for textiles with a low level of harmful substances. In 1994, the company was certified according to **ISO 9001** quality management system and the development of the product line **CLIMATEX® LIFECYCLE™** was started.

In 1995, the environmental management system was implemented, and in the spring of 1996 Rohner was certified in the frame of the European Eco-Audit **directive EU-VO-1836/93** and **ISO 14001** environmental management system.

The Climatex® series with climate control product features had already been introduced to the market in 1990, but the conventionally manufactured fabric consisted of a mixture of wool, ramie and polyester. William McDonough desired that the concept for a consumable

product would be achieved, therefore the synthetic fibre polyester would had to be replaced. The process of redesigning the product for nature started.

## **SUSTAINABLE DESIGN**

### **STEP One: The Fibres**

**Ramie**, a plant similar to linen, was found to be an excellent **alternative to polyester** in Climatex fabrics. When combined with **wool**, another natural fibre, the resulting fabric **transports moisture** away from the skin, allowing one to remain comfortable when seated for a long period of time. This patented process is registered under the trade name **CLIMATEX® LIFECYCLE™**.

### **STEP Two: The Dyechemicals and auxiliaries**

With the independent environmental institut EPEA all 60 major chemical suppliers worldwide were asked to submit their environmental sound dyechemicals and auxiliaries. They were unwilling to open their books to share the information on their deep chemistry – except **Ciba**. From a range of **1600 dyechemicals only 16 got the approval from the EPEA as sound for health and environment**, that means free of mutagens, carcinogens, bioaccumultative and persistant toxins, heavy metals and endocrine disrupters.

All these dyechemicals received positive testreports on the **industry standards** for upholstery fabrics, such as lightfastness, rubtest, perspiration test and the reproduction of the colors in manufacturing process was given.

All colors could be developed, except brilliant colors blue and green and yellow and color **black**.

### **STEP Three: The Manufacturing**

Many hurdles had to overcome and in some cases unorthodox solutions were adopted. Everything was supervised by the independent environmental institut. From the:

- **rawmaterials**, agricultural production of fibres, extraction and purification
- **spinning mills**, auxiliaries used approved from EPEA or not used at all for Ramie
- **twisting mill**, no auxiliaries are used
- **yarndyeing** procedures, with wastewateranalyses and waterreduction- and energyreductionprograms, approved by EPEA

- **weaving**, with no coating of the warpyarns in using water instead and spinning and twisting alternatives to strengthen the yarns for the weaving process
- implementation of environmental management system **ISO 14001/EU VO 1836/93**

#### **STEP Four: The Final Product**

All in all, it took **18 months** of research to create this product which is highly optimized with respect to minimization of useless materials streams, as well as with respect to closure of biological cycles and health soundness. The final product CLIMATEX® LIFECYCLE™ is competitive to standard upholstery fabrics in regards of:

- |  |                               |
|--|-------------------------------|
| - <b>Aesthetic Criteria</b>            | any design and most colors    |
| - <b>Industrial Technical Criteria</b> | all tests are met or exceeded |
| - <b>Cost Criteria</b>                 | same price as other high end  |
| - <b>Function Criteria</b>             | climate control seating       |
| - <b>Environmental soundness</b>       | compostable, biodegradable    |

William McDonough said after the product was completed:

**„This is the next industrial revolution, it has begun. What we are now saying is that environmental quality must be an integral part of the design of every product. It’s no longer just a wishful option.“**

#### **BEYOND RECYCLING**

##### **STEP Five: The Felt**

Even when chemicals are banned and the production is finally ecologically sound, waste is produced. In the case of textiles, there is **waste with selvages** on both sides of the fabric and with the cutting of the seatcovers.

**CLIMATEX® LIFECYCLE™** waste is being used to manufacture felt for **upholstery inliners** or **mulch-felt** for gardening **strawberry plants**.

##### **STEP Six: Ready for Nature (Composting and Biodegrading)**

According to the Ecologically Intelligent Design protocols, this **fabric is safe for humans and can become safe food for other organisms when it is no longer useful and is „consumed“**.

The fabric will be compostable when removed from a chair frame: it will decompose naturally and return to the ecosystem.

### **3. THE MARKETING AND COMMUNICATION SYSTEM**

The Marketing and Communication System had to be developed either for the **American U.S. Market** and for the **European Market**. As the product covers the environmental fields, the mentalities of different nations had to be taken into consideration in communicating the product and to achieve the **credibility** of the product.

First of all, to secure the uniqueness of the product and their inventors, the product had to be applied for **patents**, the decision was made for Europe and the U.S. and for the **brandregistration**, Rohner was able to use the previous registrations in most countries for **CLIMATEX®** products and simply added **LIFECYCLE™**. All patent and registration rights belong to Rohner Textil AG.

#### **CONCEPT U.S. MARKET**

In the U.S. the customer **DesignTex** decided the marketing issues and as main tool the famous name of the architect William McDonough and his „second industrial revolution-concept“ was the communicating factor.

- The Collection was called the:  
**„The William McDonough Collection“**
- A **booklet** was issued „Environmentally Intelligent Textiles“
- The Collection launching was at the „Solomon **Guggenheim** Museum New York“
- At the first exhibition at Neocon in Chicago the Collection was awarded „**best of Neocon**“
- A public relation expert was hired, several articles were issued, one in „**Wall Street Journal**“
- Two U.S. Universities, (engineering and business) started five **Case Studies**, whereas Number One was available on Internet as of September 1995, 2 Month after launching of the product.
- In March 1996 William McDonough received a **Presidential Award** from President Bill Clinton for his work in architecture and design.
- In May 1996 DesignTex started an **advertising** campaign in major interior magazines

#### **CONCEPT EUROPEAN MARKET**

In Europe, Rohner hired a marketing and communication expert to help the launching of the product. Upholstery fabric manufacturers are always **subsuppliers to the furniture industry or to wholesalers**. Rohner as a small company was not able to market the products directly to the enduser.

Rohner decided to select **16 key-cumstomers**, who had the marketimage for **credibility or technology advanced**. Whereas in U.S. the architect William McDonough was the driving force for the communication system, in Europe the **environmental institut EPEA** was selected.

- The collection was marketed:

**CLIMATEX® LIFECYCLE™**  
**Redesigned for nature**  
**Compostable and biodegradable,**  
**certified by independent**  
**environmental institut EPEA, Hamburg**

- For each customer **individual marketing documentation** was created. This included marketing tools such as:
  - **short story**
  - sample card
  - **display dealer**  
(each one individual, background „textile art“)
  - „**Give-away**“ **Enduser** – idea **flower pot felt-story**
  - Logos of CLIMATEX® LIFECYCLE™
  - **Public relation** textmoduls
  - Security data sheet
  - Flameretardent testreports for U.K.
  - Pressstory short version
  - **Pressstory** long version
  - Photos/Dias for the Press
  - Company report Rohner
  - Press releases
  - **Sales documentation**
- The **Press reacted** spontaneous in Europe and within 8 month after october 1995 over **40 newspapers**, magazines presented the story in Switzerland, Austria, Germany, Lichtenstein, France, Belgium, Holland and even scientific journals on Lifecycleassessment were interested. Two independent **television** channels transmitted the story, one for 7 minutes, the other for 3 minutes.
- In February 1996 the first customer in **Europe launched** the product, in April 96 number 2 in June 96 number 3 and 4 etc. Mostly every of the desired customers wanted desperatly the unique product in their individual design and colorvariations.
- In July 1996 Rohner received a recognition award from the **ARGE ALP** (working community alpine countries) for the development of CLIMATEX® LIFECYCLE™, with a large pressrelease.
- In August 1996 the Austrian TV Channel **ORF** presented the product. The response started to become important day after day.