SUSTAINABLE PRODUCT DESIGN AT CHT GROUP

Introduction on specific cases

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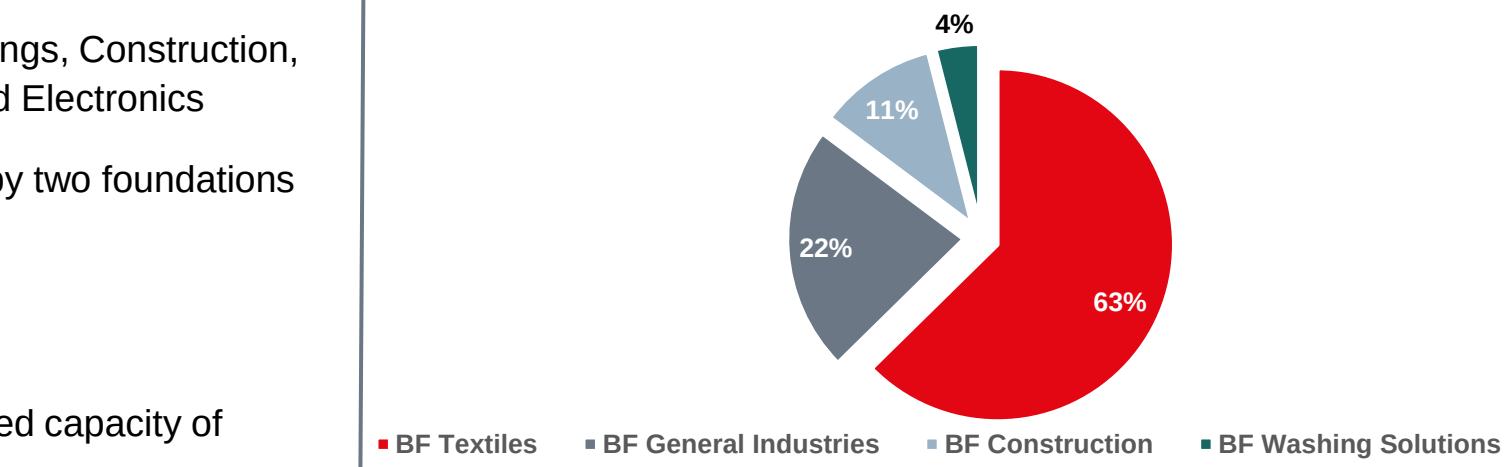
CHT - COMPANY OVERVIEW

- Global acting medium-size specialty chemicals company
- Focus industries: Textile, Paints & coatings, Construction, Consumer Care, Paper, Automotive and Electronics
- Founded 1953, today privately owned by two foundations
- HQ in Tübingen, Germany
- >2,400 employees in 23 countries
- Globally 23 production sites with installed capacity of >300,000 tons
- 2021 sales reached €630m
- Sustainability is the foundation of our company and corresponds to our culture and our identity as a global business enterprise

2021 Sales by Business Segment



Major Sustainability Activities

- Since 2015, annual sustainability report on GRI standard, voluntarily
- Since 2016, CHT Group is UN Global Compact member
- Since 2016, annual EcoVadis certifications (silver score)
- 65% of global sales with sustainable classified products

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BASICS FOR OUR SUSTAINABLE PRODUCT DESIGN

- Knowledge of the market and end-user demand
- Knowledge of upcoming trends and developments
- Partnering with customers and their customers (e.g., textile brands like Adidas, Nike, Boss etc.)
- Open for tailormade developments
- Know-how of transferring chemistry into application / function
- Defining clear internal rules for sustainable product development – e.g., raw material classification
  - We take products off the market if we consider the safety risk for people and environment to be too high, e.g., NPE

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SUSTAINABLE DYEING OF COTTON FIBERS

- Textile dyeing processes are highly energy and water consuming especially in discontinuous processing of cellulosic fibers
- CHT developed a process based on a modular system of 4 products, all Bluesign certified
- The dyeing process is adjustable to individual machinery requirements and working with all machinery types
- Dyeing dark color basic T-Shirt

37 %

24 %

20 %

Basic idea for the product/process design:

- CHT project – “How to reduce water and energy in textile dyeing processes”
- Partnering with customers & GIZ “water saving” project
- Know-how of dyeing process and dyestuff development

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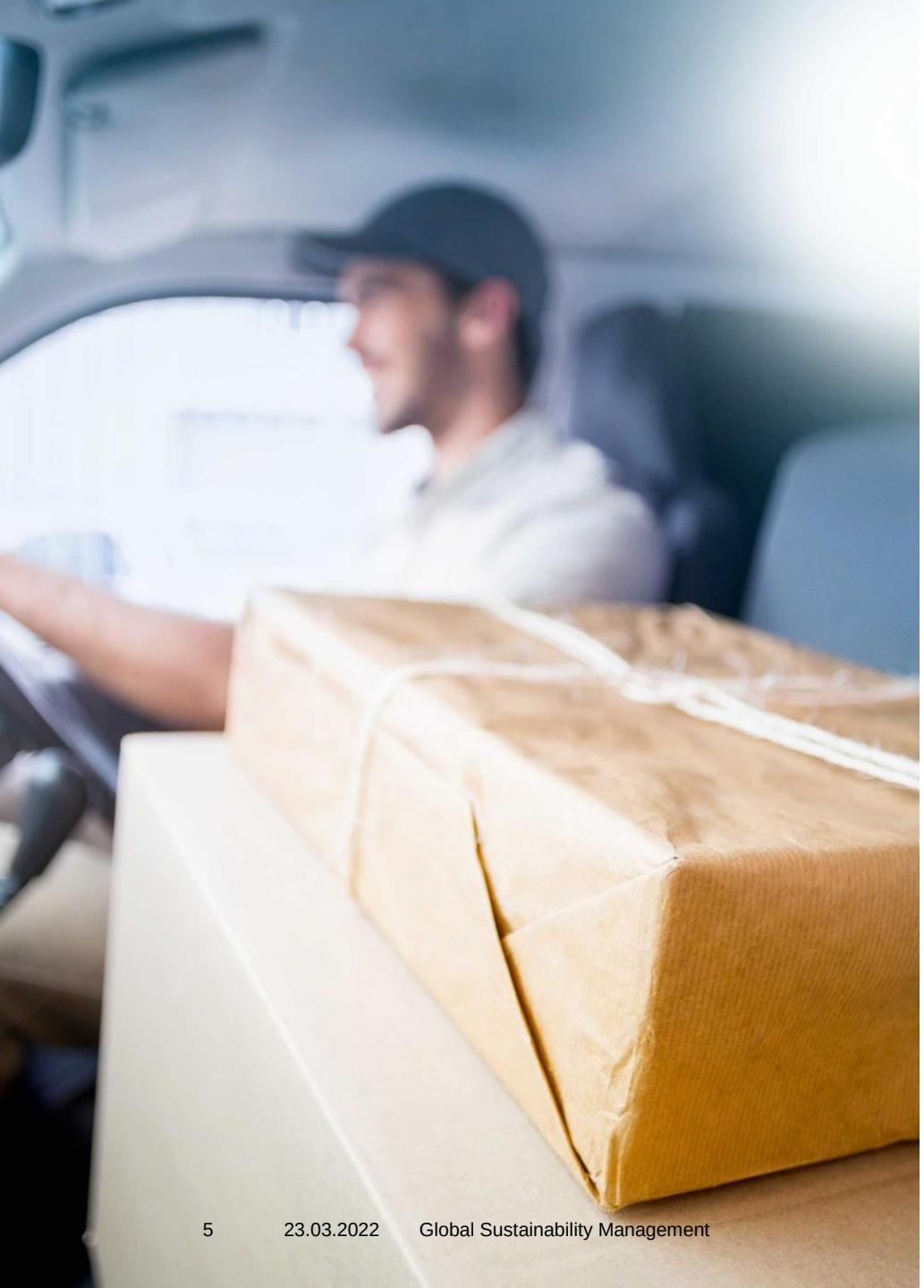

SUSTAINABILITY IS THE MAJOR DRIVER FOR R&D

Enzymes - small helpers with strong effect

- Paper manufacturing process is not only consuming a lot of water but also energy especially in grinding of pulp process
- CHT developed a special additive for the grinding process, based on enzyme technology, that reduces the energy consumption
- In 2021, the usage of the product lead to an energy saving of 13,000 MWh (= annual energy consumption of 4,370 households in Germany)
- In addition, the enzyme technologies of CHT improve machine performance, reduce the chemical consumption and increase production capacity

Basic idea for the product/process design:

- Understanding of the needs of the paper industry – reduction of CO_2 footprint
- Partnering with one Tier 1 client in Brazil – providing possibility to run industrial trials with development products
- Regular screening and analysis of customers processes in order to develop more sustainable products or processes

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WHAT DO WE NEED TO FURTHER BOOST SUSTAINABLE PRODUCTS AND SOLUTIONS

- Today, EU has one of the most comprehensive and secure regulatory framework for chemicals – we need to continue the risk assessment approach and involvement of the chemical industry
- Safe and sustainable use of chemicals is our major interest and our expertise
- To speed up on sustainable product development and design, we need to align the processes and development along the entire value chain
- Sustainable product design and development needs to be seen and managed globally, not only European

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