High-tech materials
Break-through technology for a brighter place
Agenda

Chapter 1  Covestro At a glance

Chapter 2  Connecting Solutions for Affordable & Sustainable Homes
Chapter 1

At a glance
High-tech materials for cars or buildings or fashion or sports for our modern world.

To make the world a brighter place.
At a glance

Covestro – who we are

ONE OF THE WORLD'S LEADING POLYMER PRODUCERS
At a glance
Structure
At a glance

Structure

Polyurethanes

Raw materials for rigid and flexible foams
At a glance
Structure

2
At a glance

Structure

Polyurethanes
Raw materials for rigid and flexible foams

Polycarbonates
Granules and sheets for a wide variety of applications
At a glance

Structure
At a glance

Structure

Polyurethanes
Raw materials for rigid and flexible foams

Polycarbonates
Granules and sheets for a wide variety of applications

Coatings, adhesives & specialties
Raw materials for coatings, adhesives and specialties
At a glance
Structure
At a glance

**Structure**

1. **Polyurethanes**
   - Raw materials for rigid and flexible foams

2. **Polycarbonates**
   - Granules and sheets for a wide variety of applications

3. **Coatings, adhesives & specialties**
   - Raw materials for coatings, adhesives and specialties

4. **Basic Chemicals**
   - Chlorine production as the backbone for product manufacture
At a glance

Profile
At a glance
Profile

Serving key industries

Products and solutions for a diverse range of end-markets

Present around the globe

Major sites in Europe, Asia and the Americas, close to the customers

Technologically leading

Highly efficient, environmentally compatible processes
At a glance

Strategy

Highly innovative
Focused research and development for current and future needs

Sustainable
All activities targeting at People, Planet, Profit

Experienced workforce
Around 17,200 dedicated employees worldwide
Sustainable products and applications

Covestro lightweight solutions to make a dream come true

Sun in the tank

- flying innovation lab
- ultra-lightweight polyurethane foams for the cockpit and other components
- polycarbonate films for cockpit glazing
- specialty adhesives for composite material
Sustainable products
Covestro is rethinking its raw material base

From pollutant to raw material

- Covestro is integrating CO\textsubscript{2} into the production chain
- dream production: CO\textsubscript{2} as raw material for polyols
- technical and commercial viability of CO\textsubscript{2}-containing PU foam proven in two-year test phase
Carbon Productivity
…to use carbon as smart as possible

Our vision: Drive a new perspective on value creation through carbon

Our role:
- Catalyse new insights about carbon at various stakeholder levels
- Support collaborative creation of a tool which will be made available as open source
- Consortium is seeking to launch the initiative at the UN Global Compact Breakthrough Summit in September 2017
Covestro non-financial targets 2025
Implementation along the value chains

Ten million people in underserved markets benefited by our business solutions

We have undertaken to contribute to improve the lives of ten million people in underserved markets, primarily in developing and emerging countries, by the year 2025. In collaboration with customers, governmental and non-governmental organizations we intend to develop affordable solutions based on our technologies and products to jointly develop solutions that can be employed to the economic and social benefit of those in this sector. We will focus primarily on affordable housing, sanitation and food security applications in which our materials offer significant benefits.

Getting the most out of carbon

Our products are based on carbon. In order to ensure we are delivering positive returns on our use of this element, we aim to work with our value chains, public and non-profit sectors to establish a methodology to ensure our use of carbon delivers optimal productivity. Our carbon productivity initiative aims to increase the return on carbon invested throughout the value chain.
Chapter 2

Connecting the outside to inside: *Materials for designing building envelope*

Solutions for Affordable & Sustainable Homes
Industries
Percentage sales

Automotive/transportation: 22%
Construction: 19%
Wood/furniture: 18%
Electrical/electronics: 13%
Chemicals: 9%
Sports/leisure, cosmetics, health: 19%
in total
Industries

Construction – products

Rigid polyurethane foam
• well-insulating, lightweight
• for all parts of the building

Polycarbonates
• light, tough, transparent, readily formable
• for roof structures, façade elements, sports facilities

Polyurethane raw materials for coatings
• protective, resistant, decorative
• for façades, walls, floors
2011
The first milestone:

Annual Net-positive Energy Performance - Proof of the Concept

Solar Energy Generated: 72,023 kWh
Energy Consumed: 63,910 kWh

Excess Solar Energy: 8,113
Solar Energy Consumed: 63,910

Air-conditioning: 48,045
Lighting: 3,227
Equipment: 12,638

One complete year energy production and consumption data (Period: 11-01-2011 to 10-01-2012)
Rigid polyurethane foam saves around 70 times more energy during its service life than is required for its production.

- lightweight, functional, flame retardant
- for façades, walls, floors, ceilings, roofs
Construction – insulation
Rigid polyurethane foam enables fast, lightweight, green and energy efficient construction for decent living

LIVEABLE HOUSING FOR ALL

- lightweight, functional, flame retardant
- for composite wall panels
- fast installation, prefabricated
- less manpower
- energy-efficient
- earthquake resistant
- fire safe
- green materials like paper honeycomb & wood fibre
- affordable, low cost
- avoids sand and other scarce resources
- aesthetically neat finish
- deep foundation not required
- healthier as it moderates ambient temperature and allows thermal comfort.
Cement - fibre board - Paper - honeycomb - PUF
Industries
GREEN, LIGHTWEIGHT, ENERGY - EFFICIENT
Construction – Affordable Housing

Rigid PIR foam –based PIR panels G+3 structure in Jaipur in cooperation with Rajasthan Housing Board.

- lightweight, functional, flame retardant
- for façades, walls, floors, ceilings, roofs
- Fire resistance: 1200°C for 94 min
  - Wind resistance: 180 km/hr for 2 hrs
  - PIR absorbs zero moisture
  - Thermal insulation
  - High compressive strength
Kuala Lumpur, Malaysia: CIDB G+0 House Built-up Area: 1142.2 sq. ft.
Kelantan, Malaysia: Flood Rehabilitation
G+0 House Built-up Area: 812.48 sq. ft.
Baron Resort, Langkawi, Malaysia
Langkawi, Malaysia: Employee Quarters
G+4 House Top 2 floors for speedy construction
Tamil Nadu, India: 7 Green Houses (solar powered)
G+0 House Built-up Area: 350 sq. ft.
Rajasthan, India
G+3 House Built-up Area: 567 sq. ft.
Construction – insulation

INDUSTRIAL INSULATION FOR MAXIMUM EFFECT

Location - India, Malaysia

PIR Technology based toilets were rated as best solution by third party independent auditors

community and school toilets as the next step

~ 177 Units installed in 2016
EcoHouse

The World’s First Agro Waste Board House
Solutions for converting waste to wealth

Rice husk as construction material

• Strong
• Fireproof
• Composite Dry walls
• Skill development & additional income

Latur
THE COMPANY IS CONSTANTLY WORKING TO IMPART ITS KNOWLEDGE PROCESSES AND INCREASE YOUR ENERGY EFFICIENCY.
We are courageous. We are curious. To make the world a brighter place.
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