Sustainability – Activities of MITRAS Materials

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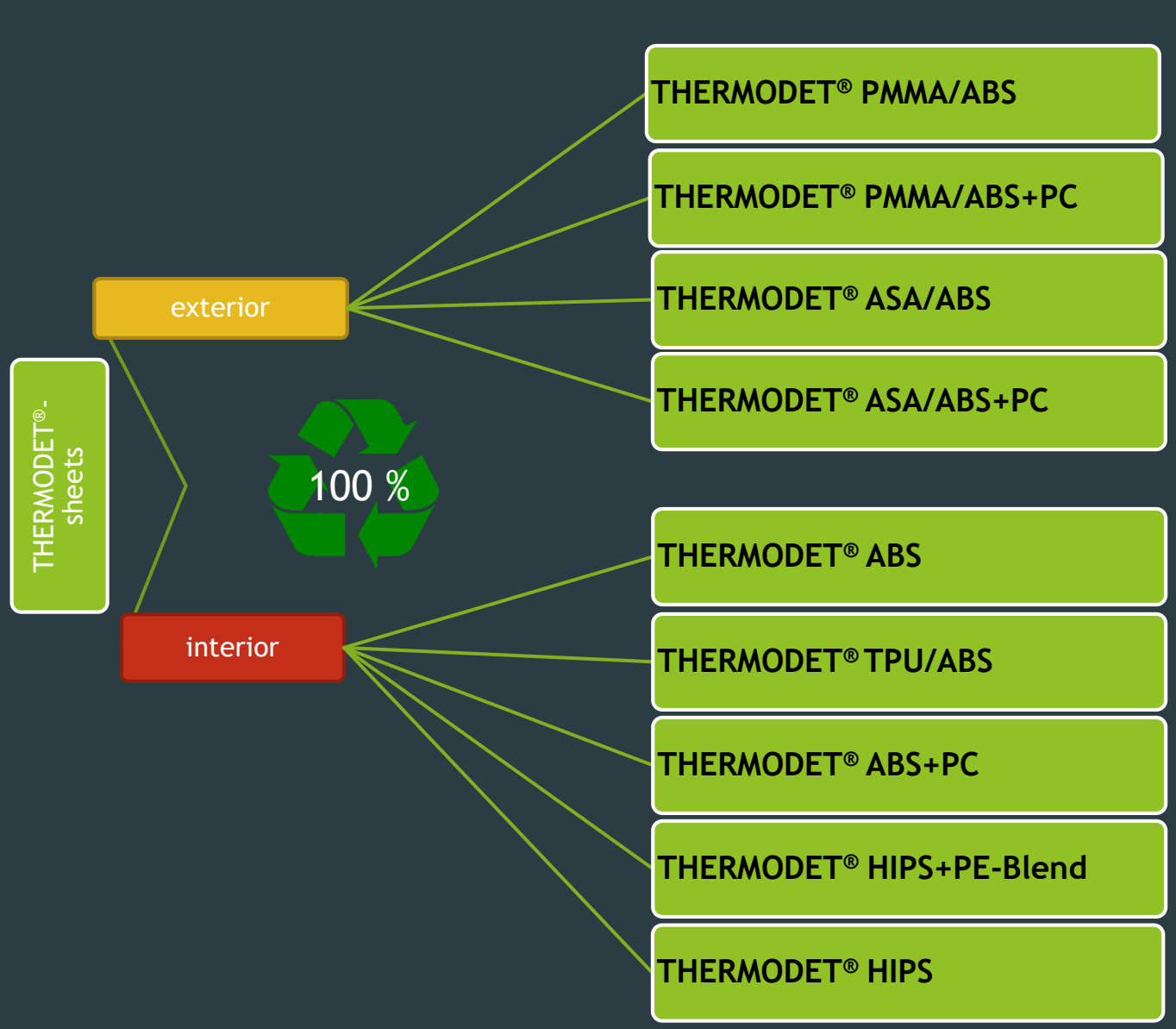
THERMODET® sheets are 100 % recyclable



options

- food contact (FDA, EU 10/2011,…)
- flame retardant (ECE 118.3, UL94-V0,…)
- electrically conductive / ESD
- UV-stabilised

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New: THERMODET® TPU/ABS ECO

- product structure (cross section):

top layer:	biobased TPU
bottom layer:	100 % regrind of post-industrial material (consisting of 2 – 3 layers)

- property profile:
  - excellent mechanical properties, abrasion resistance and good aging resistance, comparable to synthetic product version made of conventional TPU
  - approx. 40 % CO_2 savings compared to conventional TPU version
  - plant raw material originates in industrial plants - avoiding conflicts for the production of food, animal feed or pharmaceuticals

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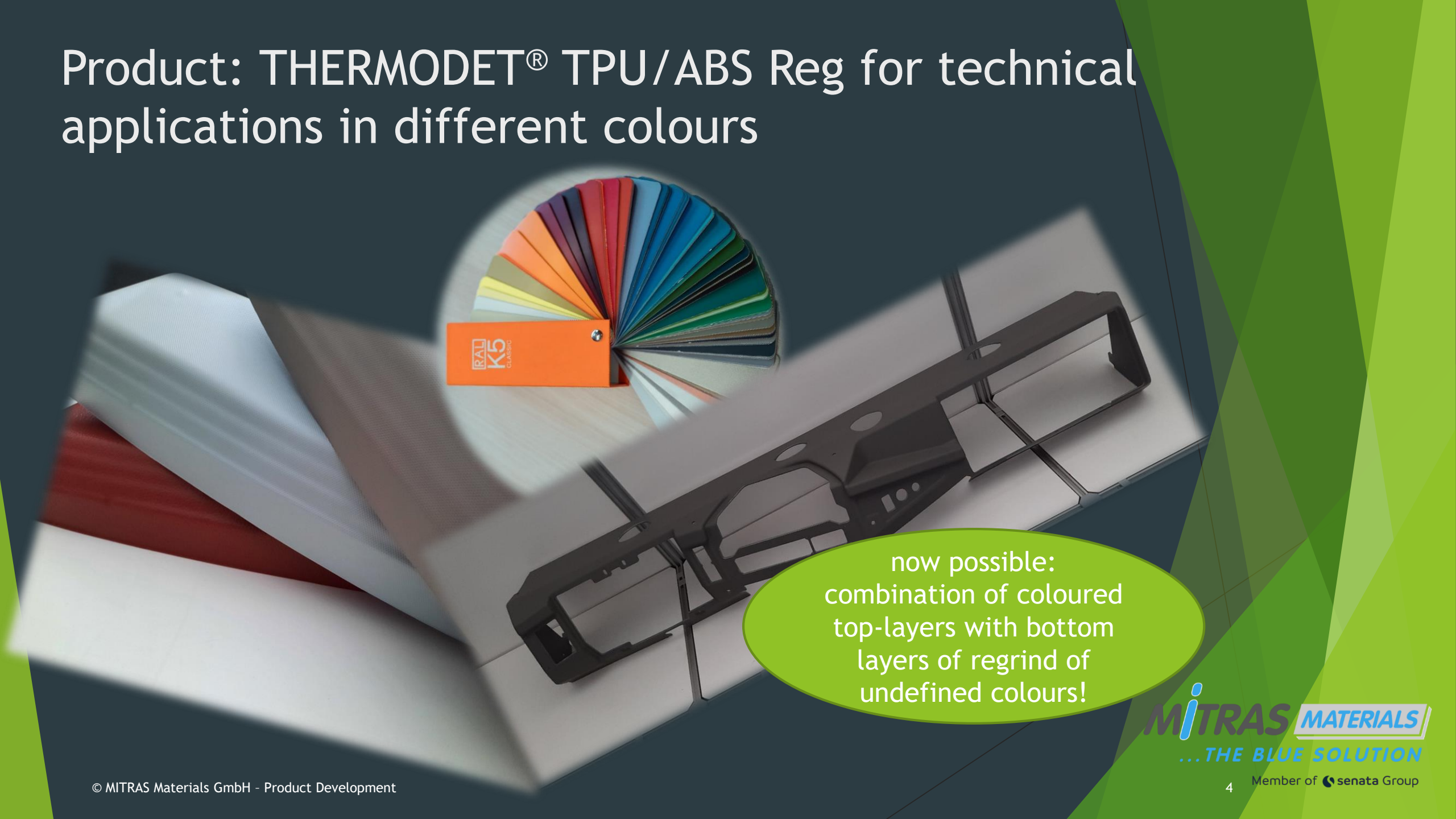
Product: THERMODET® TPU/ABS Reg for technical applications in different colours



now possible:
combination of coloured top-layers with bottom layers of regrind of undefined colours!

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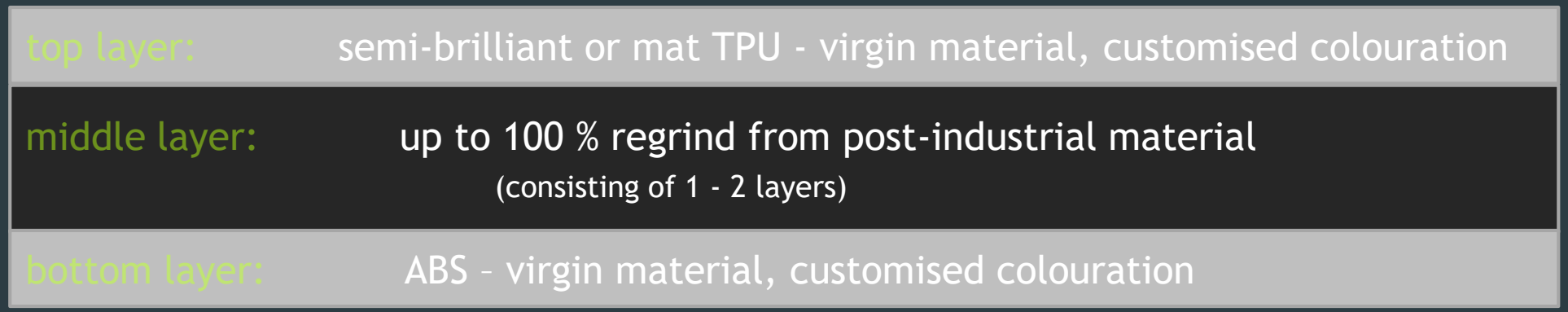
THERMODET® TPU/ABS Reg for technical applications: product profile

- constant colouration and intensity
- soft-touch
- high surface quality



- constant colouration and intensity
- constant adhesive properties

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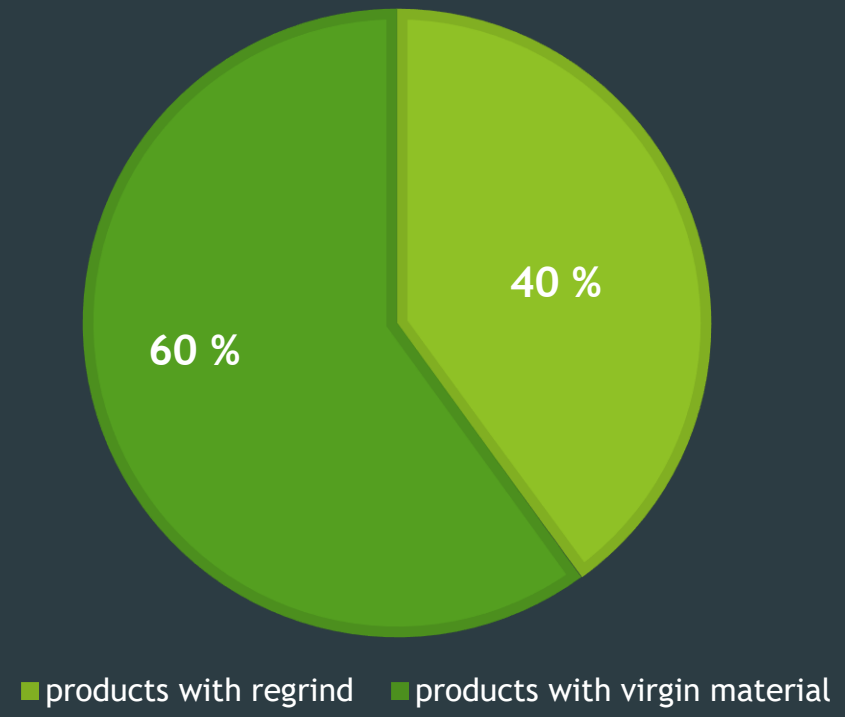
Regrind concepts

- approx. 40 % of all THERMODET® sheets have proportions of reclaimed post-industrial and post-consumer materials



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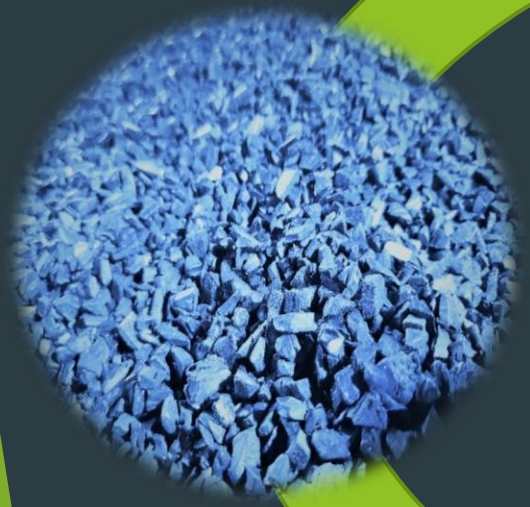
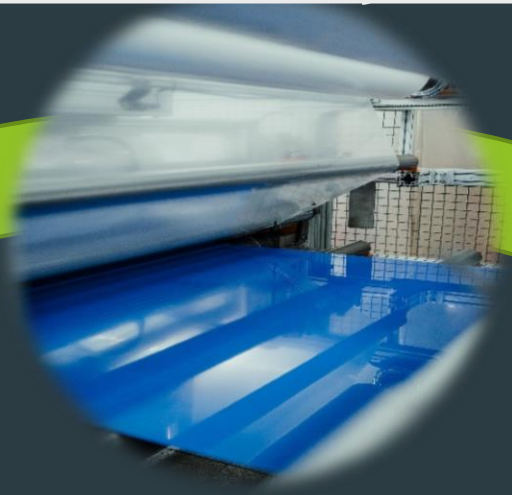
Regrind concepts - In-Line Recycling within the extrusion process





immediate in-line processing of edge trims and sheet material from production interruptions into the production process

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Post-industrial material
Ways of sourcing

regrind e.g. edge trims or cut-offs from the customer's transformation process (thermoformer)

regrind directly from the market (recycling companies)

close cooperation with external grinding companies

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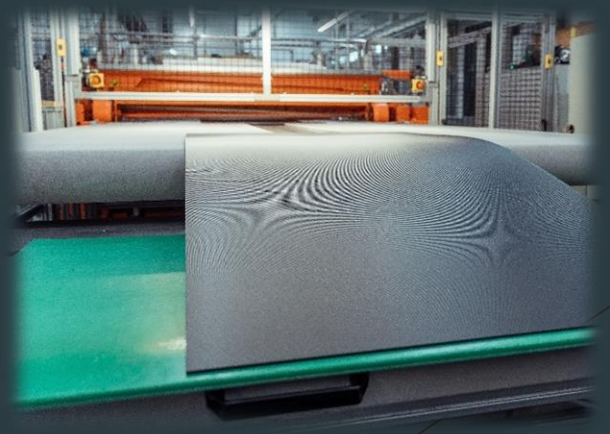
Post-consumer material

- sourcing post-consumer material from old refrigerators and controlled use for specific product lines



share of approx.
10-30 % of total
regenerated products

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Example: CO_2 emissions compared for virgin ABS to sorted ABS regrind

sale of the sheet product

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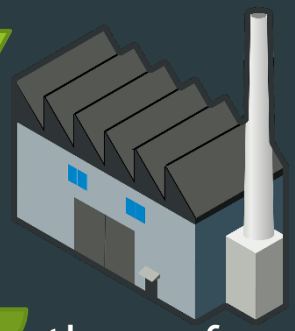
product with defined proportions of regrind material (closed loop)



thermoformer

repurchase of the edge cuttings

10 % reg share
=
approx. 8 – 9 %
CO2 saving

CO_2 emissions during the production of synthetic virgin plastic granules (according to ECO Profil - PlasticsEurope)		+	CO_2 emissions when using pure regrind without regrind preparation (CO_2 balance MITRAS Materials)	
ABS	**3.10 kg CO_2-eq./kg**		**Energy use MITRAS**	**0.01 kg CO_2-eq./kg**

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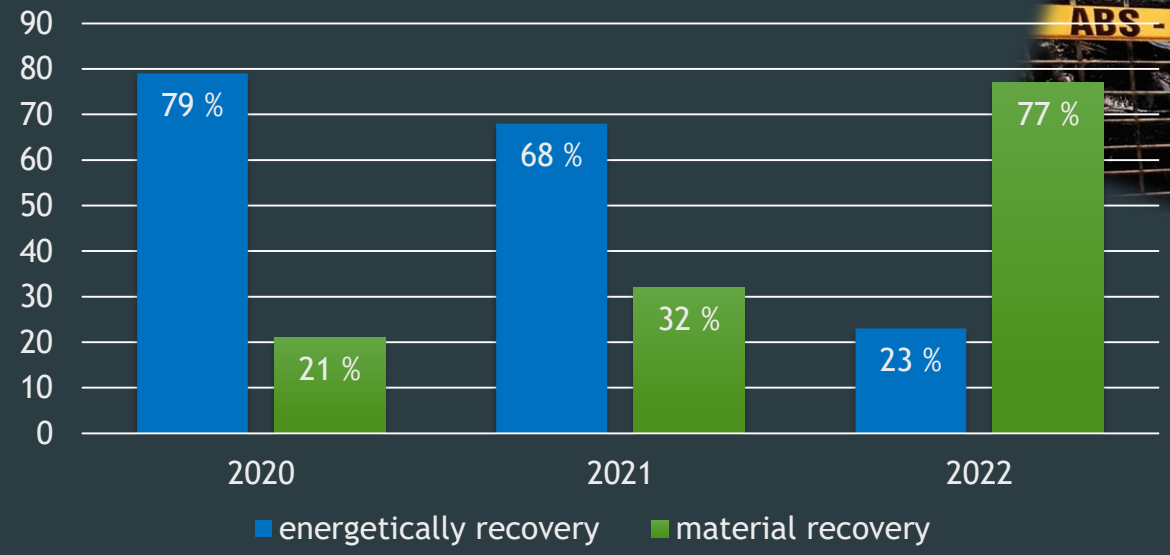
Production waste

- partial substitution of the energy recovery of plastic masses that cannot be recycled within the company by material recovery.



Production waste with share < 1 % of manufactured goods

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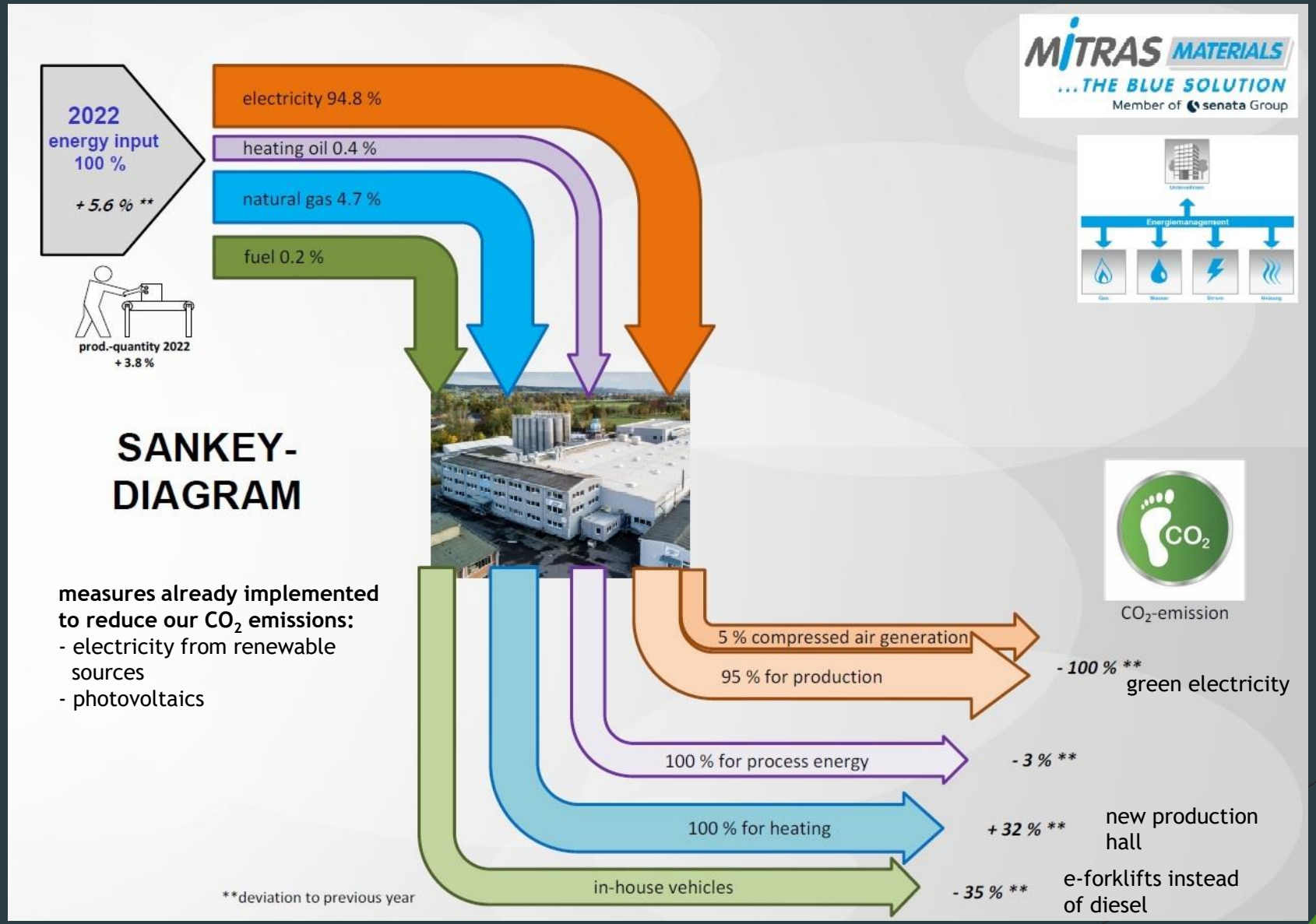
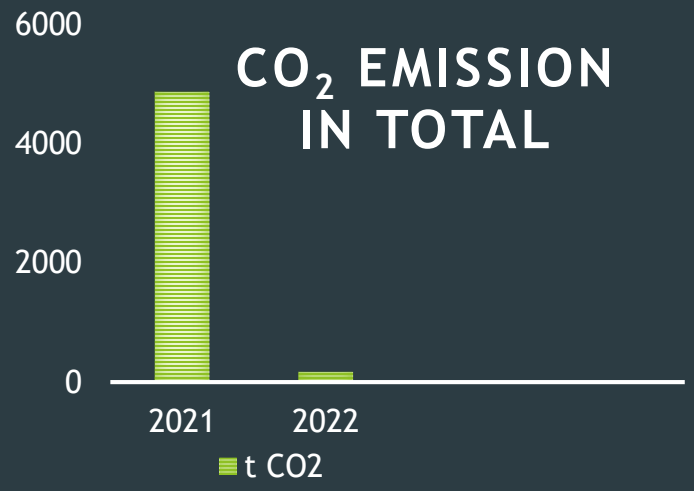
Energy use 2022



Electricity

- electricity from renewable sources since beginning of 2022

✓ TÜV SÜD certification regarding the generation of electricity from renewable energies, generation EE00



Savings of > 95 % equivalent to 4,700 t CO2

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2023 implemented: photovoltaics

- photovoltaic system with 749.89 kWp
  to independently secure electricity quantities and prices
- installation of a new, certified transfer station for interference-free power supply
- supply sustainable electricity into the grid
- battery charging stations for e-vehicles

achievable under optimal conditions:
approx. 1.520 MWh ≙ approx. 11 % of our demand

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Further measures already successfully implemented:

- electricity: - defective electric motors replaced with IE4 motor
  (IEC 60034 Part 30 "Efficiency classifications of three-phase cage motors" (IE code)
  - replacement of lighting elements to the latest, most energy-saving standards
- compressed air: - continuous monitoring of compressed air leakage throughout the plant
- natural gas: - use of compressor waste heat for heating the buildings
  - reduction of the flow temperature of the heating systems
- fuel: - replacing diesel forklifts by e-forklifts
  - battery charging stations for e-vehicles

Further mesasures in planning / in implementation

- electricity: - increase use of waste heat
- natural gas: - utilise waste heat from extrusion lines for granulate drying
- water: - gradual replacement of water-cooled vacuum pumps by dry vacuum pumps
  - further reduction of water consumption

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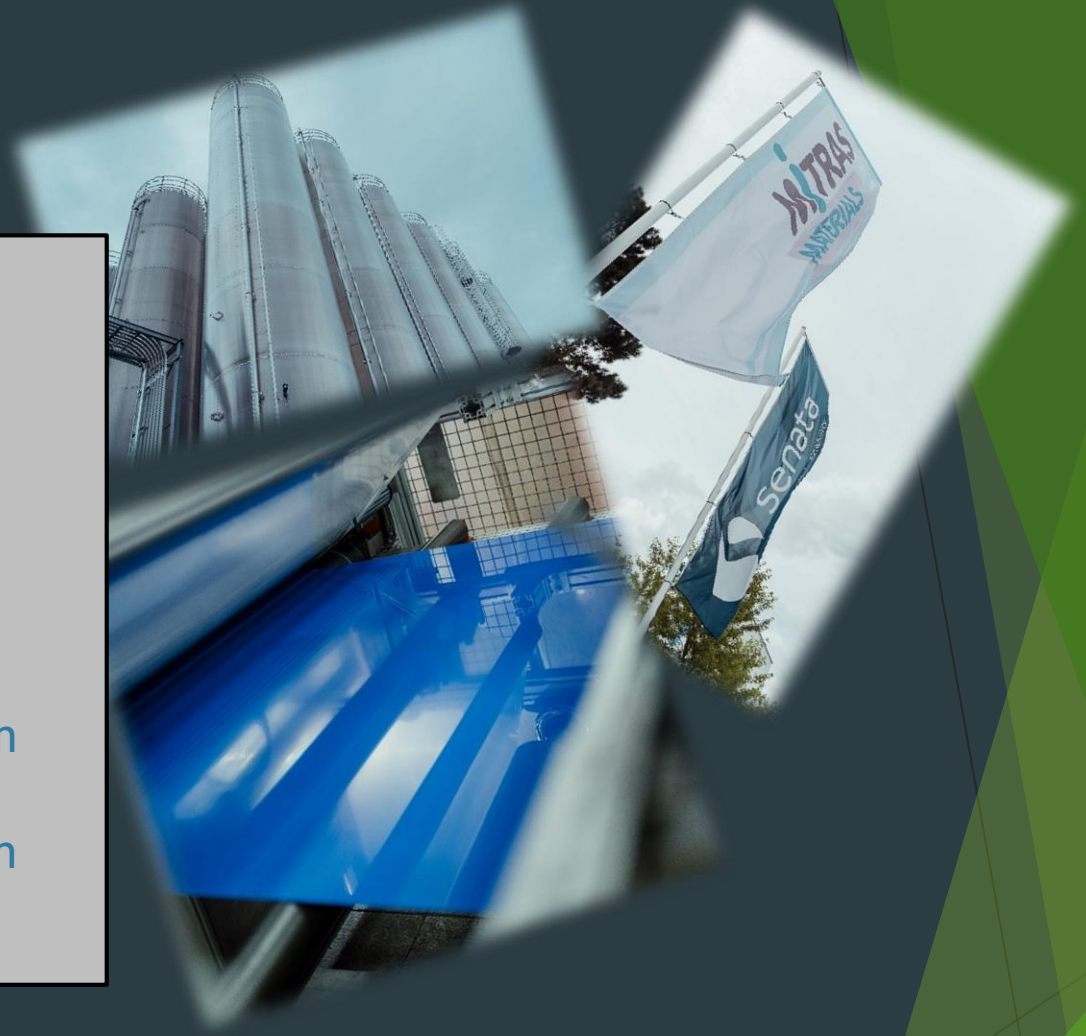

Feel free to contact us to learn more about our sustainability activities!