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BMW i VISION CIRCULAR

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THU Technische Hochschule Ulm

Overview

1. About

- Built by BMW for IAA 2021 in Munich
- One of 4 concept vehicles
- Full electric drive
- Focused on circular economy
- Design goal was 100% recycled or recyclable materials

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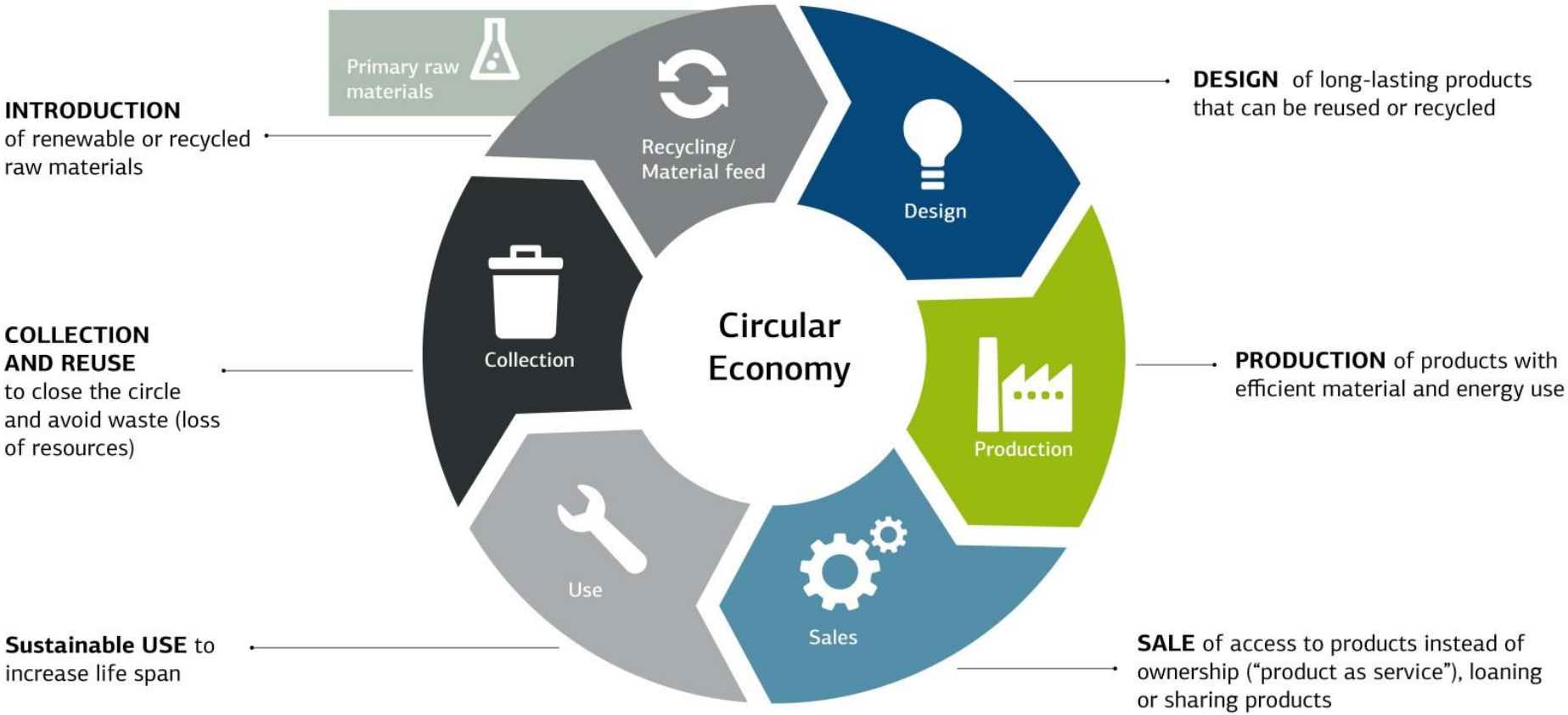
(3)

2. Circular Economy

Value creation cycle in the circular economy



(4)Source: KfW Research, according to acatech (2018)

3. Promo Film

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[https://youtu.be/WieBN931vos]

4. Design Principles

RE:THINK

- Circular Economy starts with rethinking
- Processes & manufacturing must be questioned
- Every part must be revised, overhauled or if not needed completely removed

RE:DUCE

- “I do more with less”
- Reduce use of materials, amount of parts & surface finishes (e.g. paint, chrome, …)
- Reduce ecologic footprint of materials
- Reduce complexity of user interfaces

RE:USE

- Extend lifetime of the car
- OTA-Updates & “Option as a service” bring new experiences & continuous improvement
- Reuse of materials through refurbishment
- Connections must be easily removable

RE:CYCLE

- “Secondary First” – use recycled material
- Recycle material at end of lifecycle
- Material separation must be easy
- No use of composite materials

5. Exterior

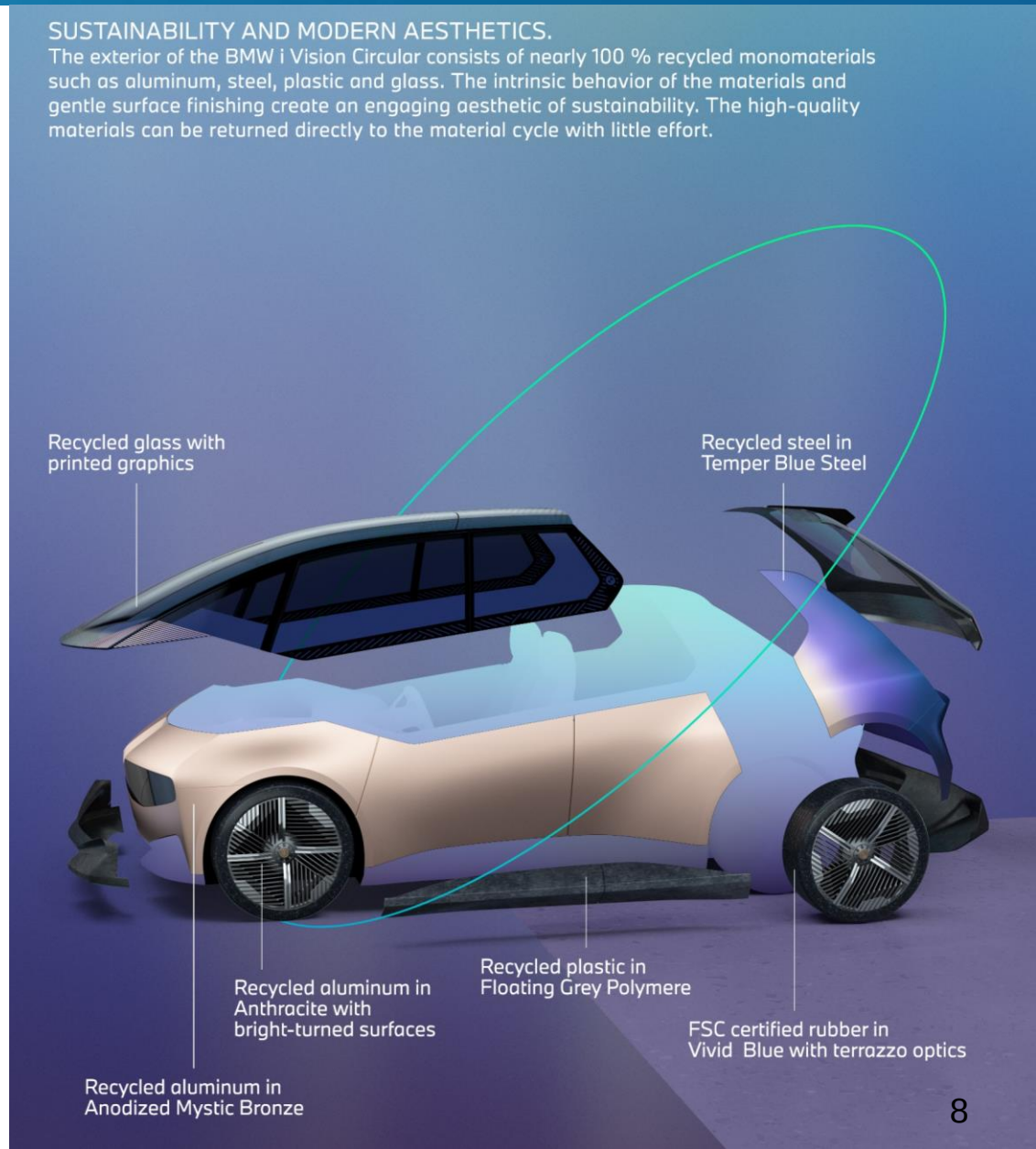
- Interior space maximized
  - ► Less space usage in cities
- Anodized aluminum instead of paint
  - ► Easier to recycle

- Inspired by BMW i3
- Purist
- Use of different materials minimized

5. Exterior

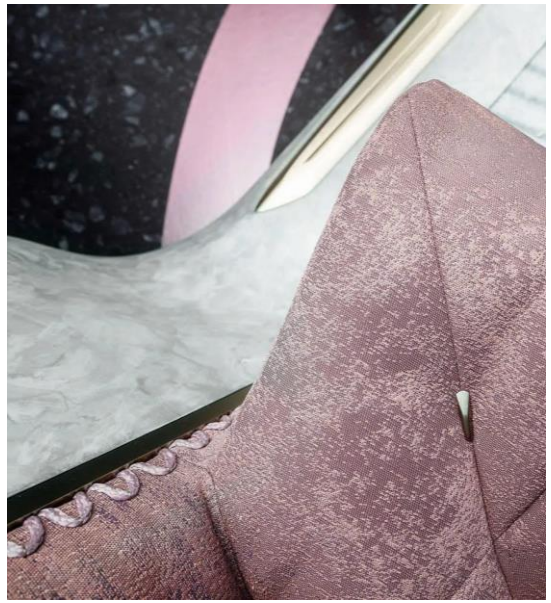
- Characteristic radiator grill replaced with smart light concept
- Engraved logo for reduced material use

- Tires made from natural rubber
- Rims combine minimal material use and maximal brake cooling

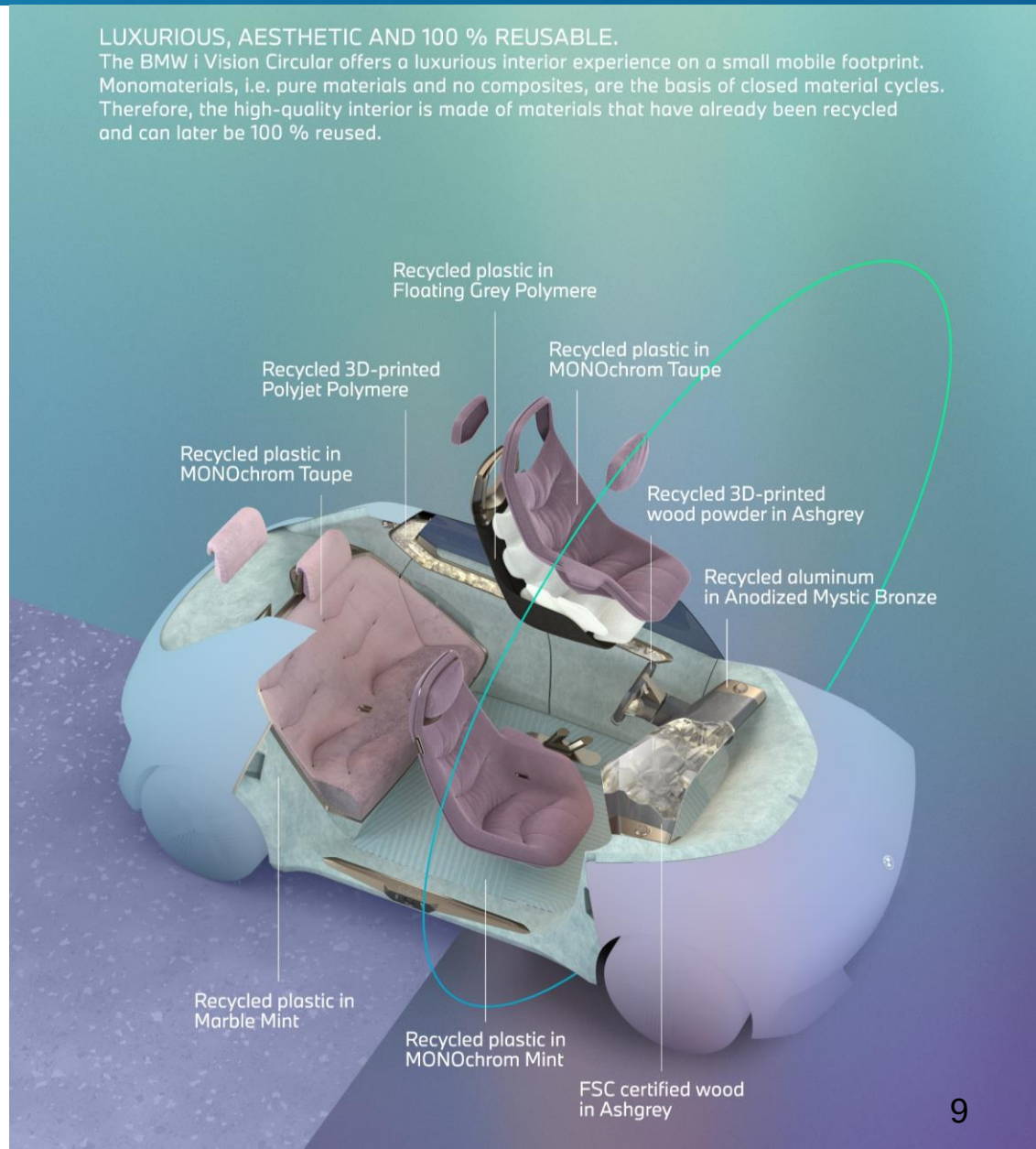


6. Interior

- Elimination of center console and seats on aluminum posts free up space
- Made of recycled plastic, aluminum, polymer & wood



- Parts are connected with knobs & cords
- No glued / composite materials



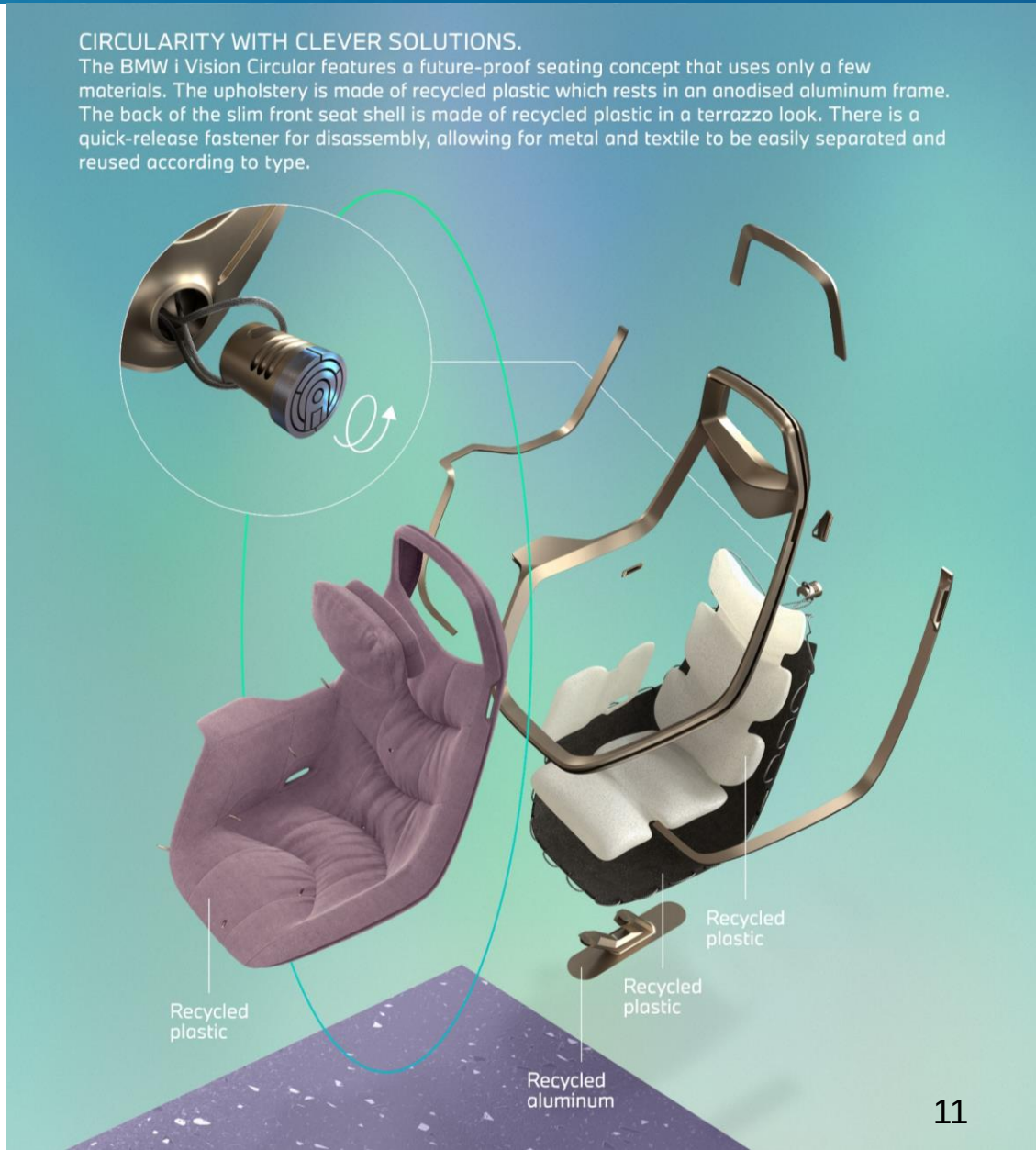
6. Interior

- All Information displayed on large HUD

  (Head Up Display)
- “phygital experience“
- 3D-printed body with sensors for user input
- Light effects react & adapt
- Removal of buttons makes recycling easier

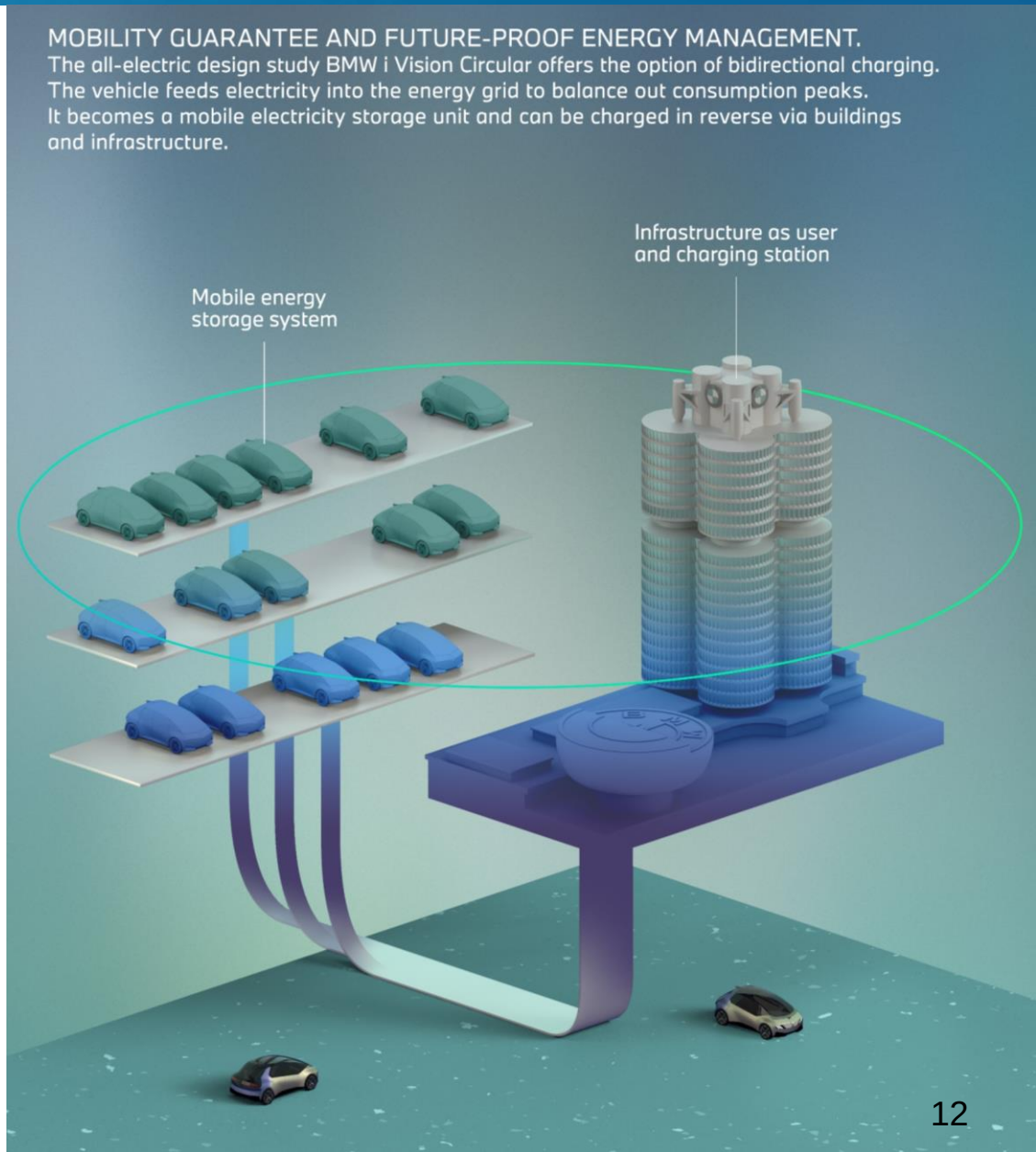
7. Joyful Fusion

- Quick release mechanism to connect materials
- Worn out surfaces can easily be replaced & upgraded
- Easy disassembly and separation of materials for more effective recycling
- Integrated in seats, front, doors and even tires



8. Vehicle to Grid

- Bidirectional charging capabilities
- Stored electric energy can be fed back to grid
- Large scale solutions can be used to stabilize the grid
- Private households can store solar power to be less dependent from grid
- Mobile Power Supply



9. Critique

- Focused on design, technical aspects neglected
- Vision Circular shows path towards Circular Economy
- Demonstrates that a sustainable car is possible
- Often neglected for economical reasons
- Secondary use of materials gets more common, already often used for seats
- Vehicle2Grid: Hyundai, KIA & Nissan leading the market

Sources

(1) https://www.press.bmwgroup.com/deutschland/article/detail/T0341253DE/der-bmw-i-vision-circular

(2) https://www.electrive.net/2021/09/06/bmw-i-vision-circular-wie-ein-bmw-i3-im-jahr-2040-aussieht/

(3) https://www.ad-magazin.de/artikel/iaa-muenchen-bmw-i-vision-circular-kreislaufwirtschaft

(4) https://www.kfw.de/stories/environment/natural-resources/circular-economy-infographic/

Images

(1) Main source (all images without specific reference): https://www.press.bmwgroup.com/deutschland/article/detail/T0341253DE/der-bmw-i-vision-circular

(2) https://www.autobild.de/artikel/tops-und-flops-iaa-2021-meinung-20533785.html

(3) https://insideevs.de/news/530550/bmw-vision-amby-pedelec-tempomodi/

(4) https://www.kfw.de/stories/environment/natural-resources/circular-economy-infographic/

(5) https://press.kia.com/eu/en/home/media-resouces/press-releases/2021/The-all-new-Kia-EV6-offers-an-outstanding-level-of-usability.html