



Nachhaltige Produktentwicklung und ihr Beitrag zur Kreislaufwirtschaft

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Externe Treiber der nachhaltigen Produktentwicklung



EU Taxonomie



Circular Economy Action Plan



CSRD



Kundenanforderungen

Übergang vom Handlungsfeld zur nachhaltigen Produktentwicklung

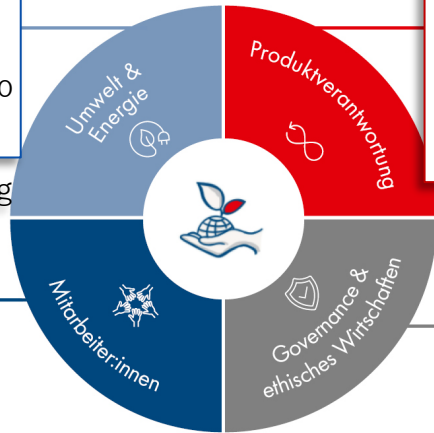


Umwelt & Energie

- Verantwortungsvoller Materialeinsatz
- Abfall & Recycling

Mitarbeiter:innen

- Arbeitssicherheit & Gesundheit
- Diversität & Chancengleichheit
- Faire Entlohnung & betriebliche Leistungen



Produktverantwortung

- Produktentwicklung
- Nachhaltiger Produktlebenszyklus

Governance & ethisches Wirtschaften

- Nachhaltige Lieferketten
- Integrität & Compliance



Steuergrößen einer nachhaltigen Produktentwicklung



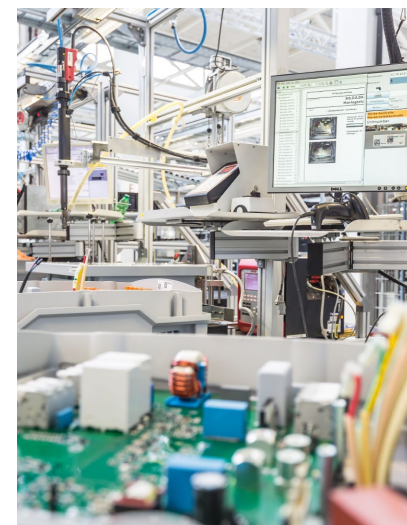
In der Entwicklung (wenn möglich) auf gefährliche Stoffe zu verzichten



Bauteile mit einem möglichst hohen Sekundärrohstoffanteil verwenden



Den CO₂ Fußabdruck von Bauteilen bei der Entwicklung betrachten



Vermeehrt alte Wechselrichter reparieren (*Global Repair Program*)



Beim Design den Fokus auf eine hohe Lebensdauer legen

Was sind gefährliche Stoffe?



- ❖ Gefährliche Substanzen sind in Material Compliance Anforderungen reguliert
- ❖ Welche Anforderungen betreffen mich?
- ❖ Material Compliance Management System implementieren
- ❖ Prüfen welche Bauteile mit gefährlichen Substanzen substituiert werden können

EU Taxonomie & gefährliche Stoffe



DNSH – Appendix C

Appendix C: Application level(s) (1/2)

Exemplary status of compliance that could occur in case of a HARD interpretation of APP. C

OPTION 1 – “HARD” interpretation of Appendix C			Fulfillment of requirements	
Current exemptions to the prohibitions to use certain substances are NOT allowed in the context of Appendix C, except where explicitly mentioned in Appendix C			G = Governance I = Implementation M = Monitoring	
The activity does not lead to the manufacture, placing on the market or use of:		EU countries	NON-EU countries	
a) POP (Persistent Organic Pollutants)	Substances in Annexes I and II to Regulation (EU) 2019/1021 , except in the case of substances present as an unintentional trace contaminant	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / doc to be clarified / set up ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / documentation might need to be clarified / set up ? - M: Monitoring gap, new control processes needed -	
b) Mercury	Mercury and mercury compounds, their mixtures and mercury-added products as defined in Article 2 of Regulation (EU) 2017/852	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / doc to be clarified / set up ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / documentation might need to be clarified / set up ? - M: Monitoring gap, new control processes needed -	
c) ODS (Ozone Depleting Substances)	Substances, whether on their own, in mixture or in articles, listed in Annexes I or II to Regulation (EC) No 1005/2009	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / doc to be clarified / set up ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: implementation process / documentation needs to be set up ? - M: Monitoring gap, new control processes needed -	
d) RoHS (Electrical and electronic equipment)	Substances, whether on their own, in mixtures or in articles, listed in Annex II to Directive 2011/65/EU , except where there is full compliance with Article 4(1) of that Directive	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the one explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	
e) REACH (Registration, Evaluation, Authorization and Restriction of Chemicals)	Substances, whether on their own, in mixtures or in an article, listed in Annex XVII to Regulation (EC) 1907/2006 , except where there is full compliance with the conditions specified in that Annex	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	
f)	Substances, whether on their own, in mixtures or in an article, meeting the criteria laid down in Article 57 of Regulation (EC) 1907/2006 and identified in accordance with Article 59(1) of that Regulation, except where their use has been proven to be essential for the society	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	
g)	Other substances, whether on their own, in mixtures or in an article, that meet the criteria laid down in Article 57 of Regulation (EC) 1907/2006 , except where their use has been proven to be essential for the society.	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	G: full prohibition of substances required in policies (no exemptions allowed – except the ones explicitly mentioned on the left) ? - I: existing tools / processes need to be adapted in order to reflect full prohibition ? - M: Monitoring gap, new control processes needed -	

Stockholmer-, Minamata-Übereinkommen und Montreal-Protokoll sind völkerrechtlich verbindliche Verträge – keine der Stoffe sollte im Produkt vorhandensein

RoHS: potentiell Substitution von Stoffen möglich

REACH: SVHC ... „except where their use has been proven to be essential for the society“



Substitution von SVHC's



1. **Ermittlung** der Bauteile mit SVHC Stoffe
2. Anfrage **bei Lieferanten**, ob es Alternativen ohne SVHC Stoffe gibt
3. **Technische Bewertung**, ob die Alternativen eingesetzt werden können
4. **Prozessanpassung:** Im Entwicklungsprozess werden bei Neuanlage von Bauteilen SVHC Prüfungen durchgeführt

Einsatz von Sekundärrohstoffen



- ❖ Treiber ist ebenfalls die EU Taxonomie und die Kreislaufwirtschaft
- ❖ Welche Bauteile haben hier Relevanz?
- ❖ Bewusstsein bei Lieferanten
- ❖ Mono-Materialien vs komplexe



Ermittlung der Sekundärrohstoffqu ote



1. Produzierte Wechselrichter/Jahr



2. Mapping der Stückliste mit den



Verkaufszahlen



3. Beschränkung auf massenrelevante



Bauteile > 80%

4. Anfrage durch Procurement bei

Betrachtung des CO₂ Fußabdruck im Entwicklungsprozess

- ❖ Ziel: Eine Steuergröße zur nachhaltigen Produktentwicklung schaffen
- ❖ Ein benutzerfreundliches Tool schaffen
- ❖ Basis eine ausführliche LCA eines Model Wechselrichters



Eco-Design Tool



Vorstudie: Ökodesign-Anforderungen in der Produktentwicklung SMA



Gültigkeit der Daten

Wissen über Hotspots

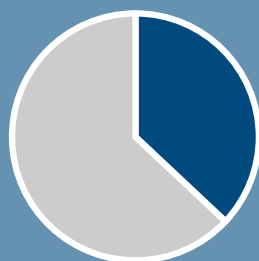
Life Cycle Assessment

- Basierend auf der Stückliste
- Hotspots für CO² Fußabdruck Herstellung
- Bewertung der Ergebnisqualität
- Andere Umweltauswirkungen als Kontrollgröße
- Dokumentation und Präsentation

Ergebnisse des Life Cycle Assessments

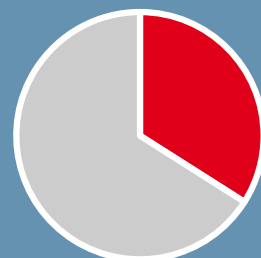


Aluminium



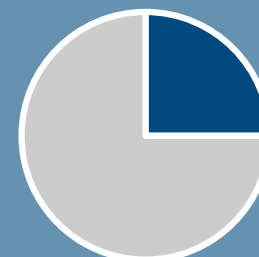
Masse 37%

vs.



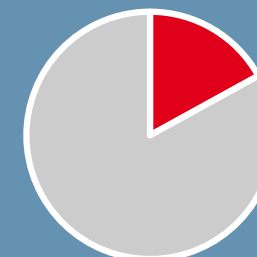
GWP* 34%

Drossel und Transformatoren



Masse 25%

vs.



GWP* 17%

IC



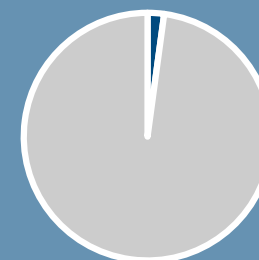
Masse 0,1%

vs.



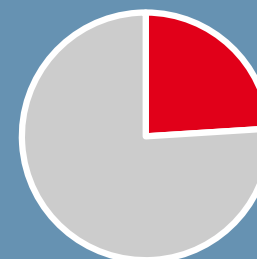
GWP* 9%

PCB



Masse 2,15%

vs.

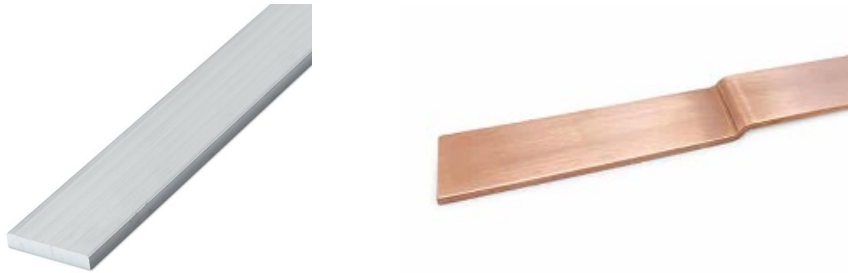


GWP* 24%

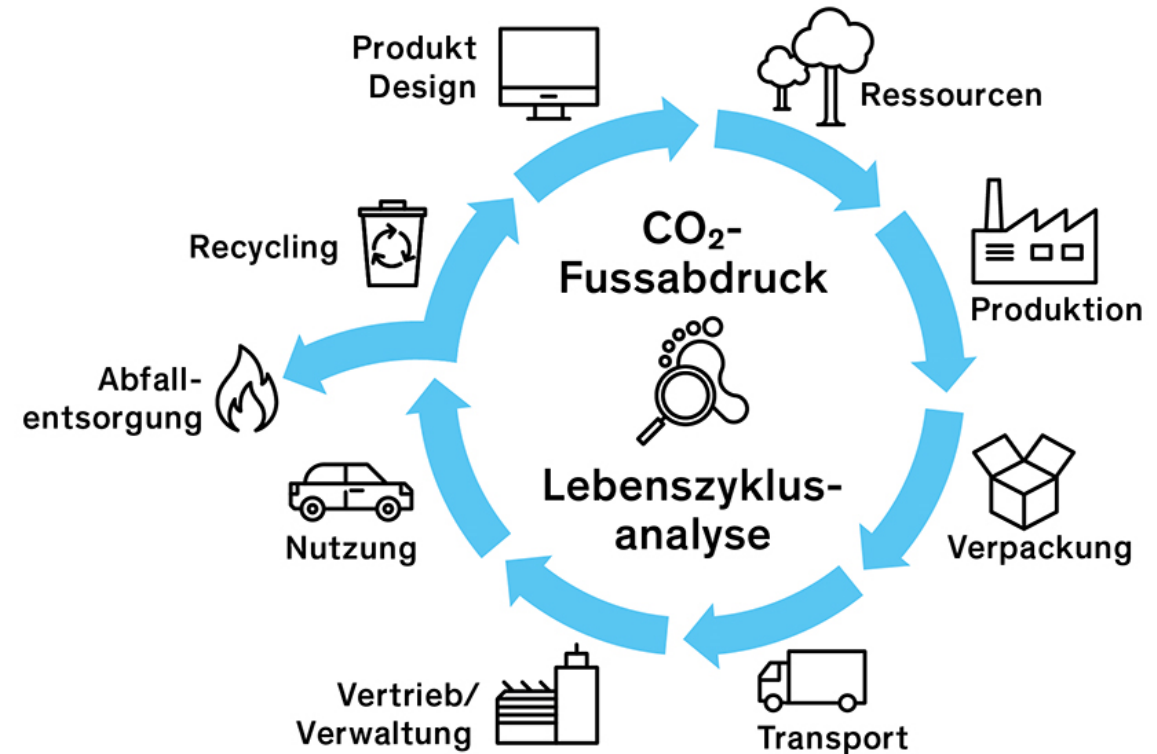
Entscheidungshilfe Eco-Design Tool

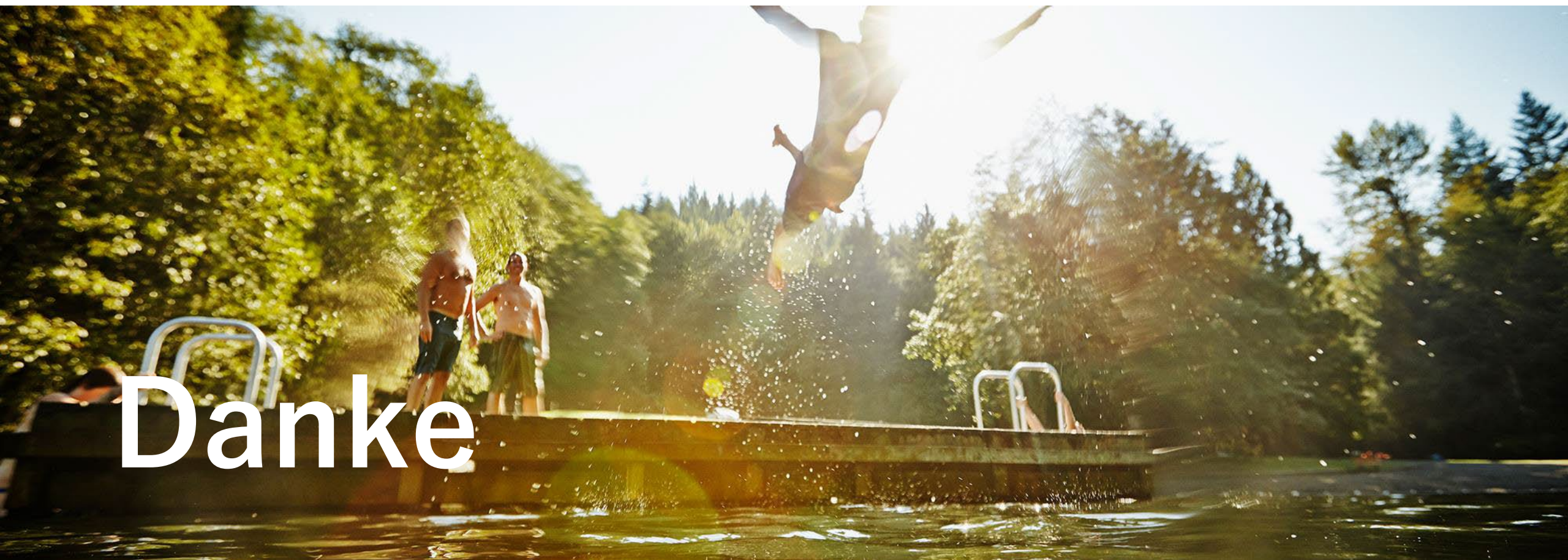


Aluminum vs. Kupfer



- ❖ Sekundärrohstoffanteil
- ❖ Elektrische Leitfähigkeit
- ❖ Masse
- ❖ ...





Danke