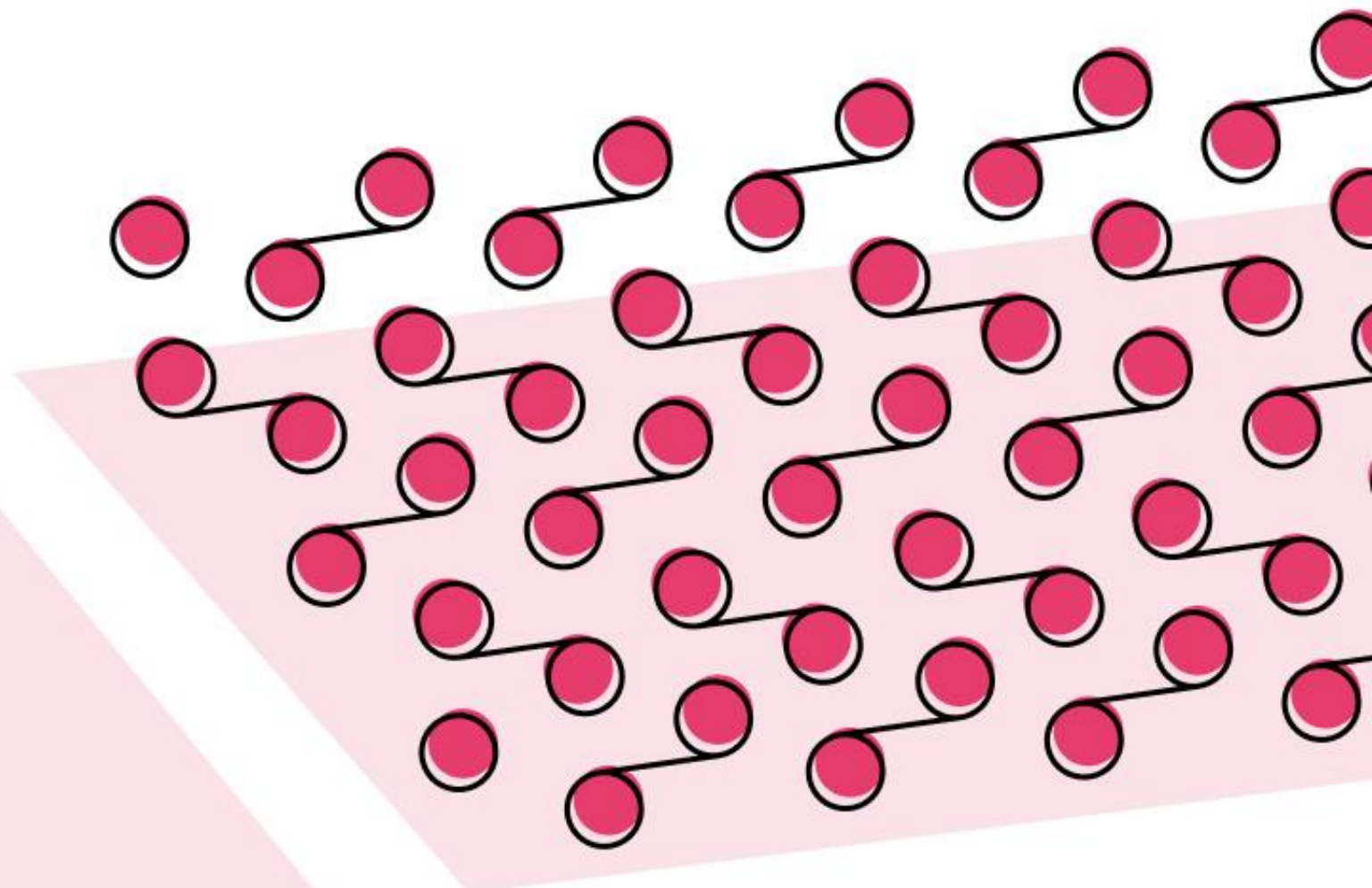




**KI
OPTIPACK**



EcoOptiPack – Using openLCA and onlineLCA for an easy-to-use assessment tool for plastic packaging

Friedrich Halstenberg, Anna Kerps, François Le Rall



GEFÖRDERT VOM

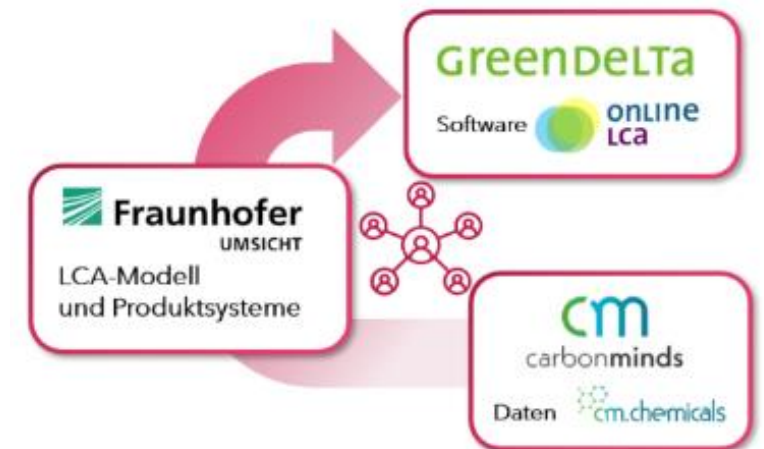
Bundesministerium
für Bildung
und Forschung

FONA

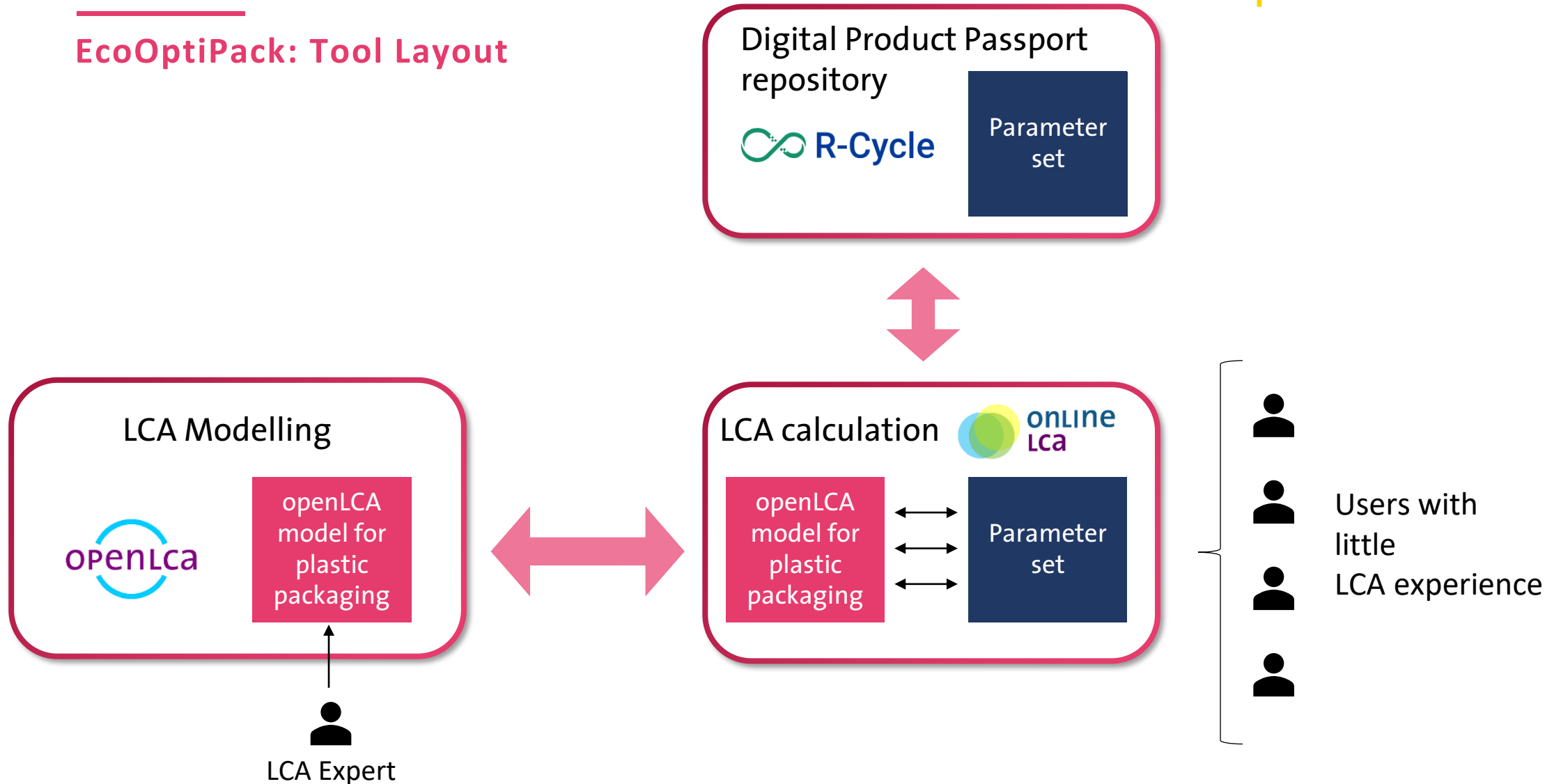
Forschung für Nachhaltigkeit

Easy-to-use tool for plastic packaging assessment: EcoOptiPack

- Main users: Product developers with no LCA expertise
- Variable user inputs:
 - Product with up to four components: body, lid, closure, sleeve
 - Various plastics: HDPE, LDPE, PP, PS, PET and PVC
 - Different production technologies: injection molding, thermoforming, blow molding and various extrusion processes
 - Manual input of recyclability
- (Partially) automated assessment based on the digital product passport (DPP)



EcoOptiPack: Tool Layout



Parameter mapping from openLCA to onlineLCA



Inputs/Outputs - Packaging production (cradle-to-gate)

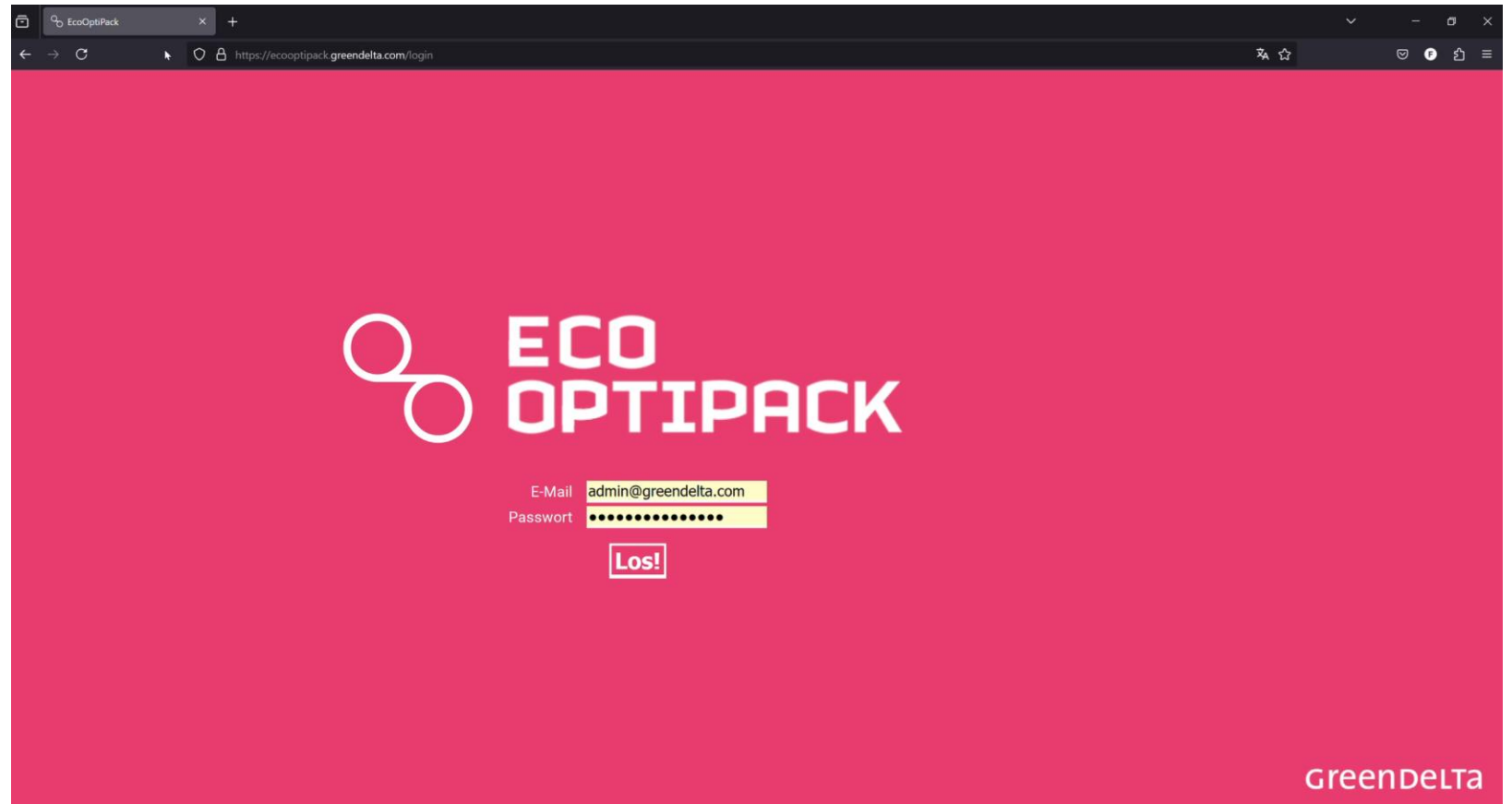
▼ Inputs

Flow	Amount	Unit
⚙ Packaging component, body	m_body	Item(s)
⚙ Packaging component, lid	m_lid	Item(s)
⚙ Packaging component, seal	m_seal	Item(s)
⚙ Packaging component, sleeve	m_sleeve	Item(s)

Which components are included in the plastic packaging?

- ☒ Verpackungskörper (body)
- ☐ Deckel (lid)
- ☐ Siegelfolie (seal)
- ☐ Banderole (sleeve - hier nur aus Kunststoff möglich)

Tooldemo EcoOptiPack – Calculation



The screenshot shows a web browser window with the address bar displaying "https://ecooptipack.greendelta.com/login". The page has a solid pink background. In the center, the "ECO OPTIPACK" logo is displayed in white. Below the logo, there are two input fields: "E-Mail" with the value "admin@greendelta.com" and "Passwort" with a masked password represented by dots. A red "Los!" button is positioned below the password field. The "GreeneDelta" logo is visible in the bottom right corner of the page.

EcoOptiPack

https://ecooptipack.greendelta.com/login

**ECO
OPTIPACK**

E-Mail

Passwort

Los!

GreeneDelta

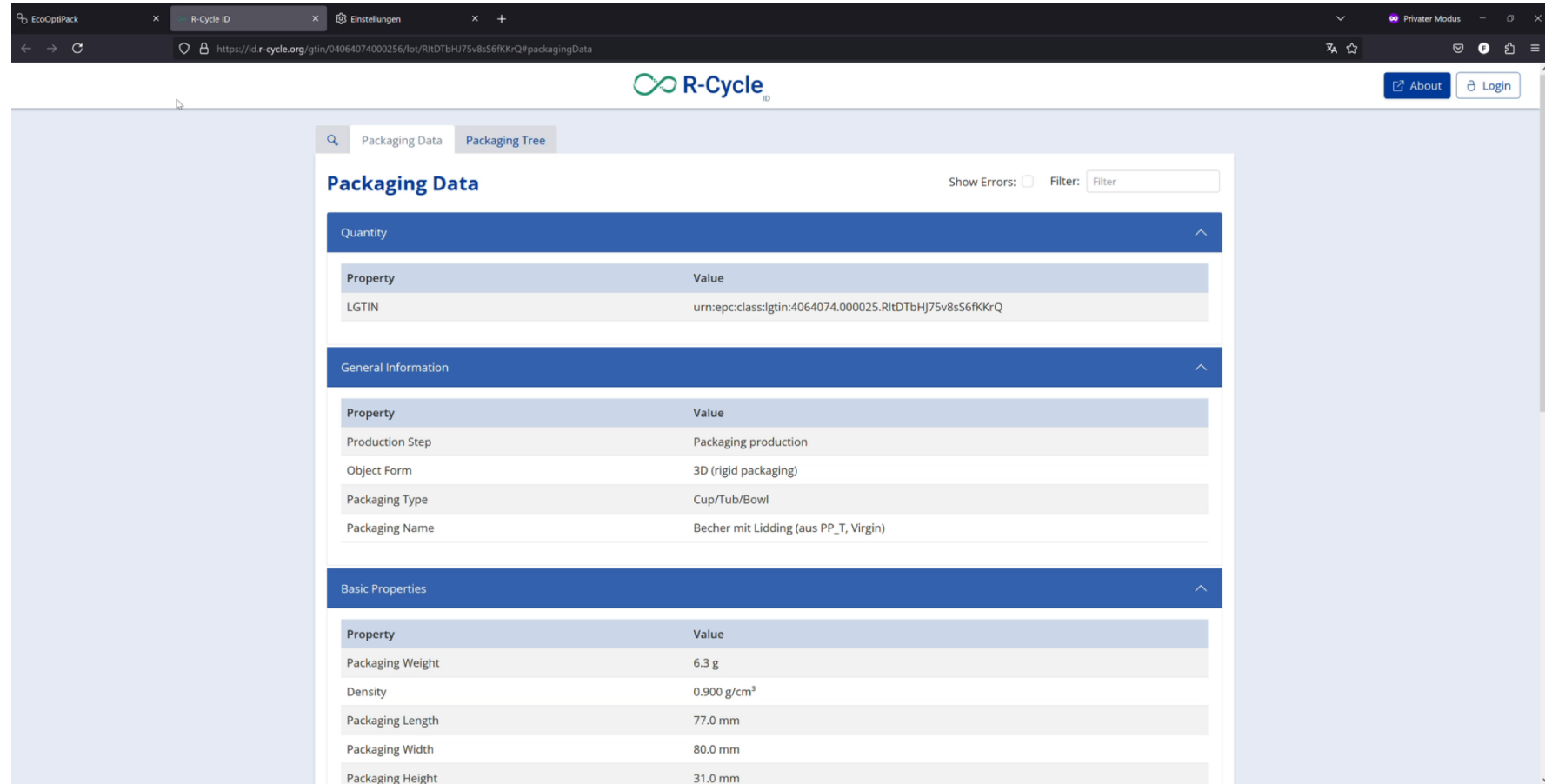


E-Mail

Passwort

Los!

Tooldemo EcoOptiPack – Digital Product Passport



The screenshot shows the EcoOptiPack web application interface. The browser address bar displays the URL: <https://id.r-cycle.org/gtin/04064074000025/lot/RltDTbHJ75v8sS6fKKrQ#packagingData>. The application header includes the R-Cycle ID logo and navigation links for 'About' and 'Login'. The main content area is titled 'Packaging Data' and features a search bar, a 'Show Errors' checkbox, and a 'Filter' input field. The data is organized into three expandable sections: 'Quantity', 'General Information', and 'Basic Properties'.

Property	Value
Quantity	
Property	Value
LG TIN	urn:epc:class:lg tin:4064074.000025.RltDTbHJ75v8sS6fKKrQ
General Information	
Property	Value
Production Step	Packaging production
Object Form	3D (rigid packaging)
Packaging Type	Cup/Tub/Bowl
Packaging Name	Becher mit Lidding (aus PP_T, Virgin)
Basic Properties	
Property	Value
Packaging Weight	6.3 g
Density	0.900 g/cm ³
Packaging Length	77.0 mm
Packaging Width	80.0 mm
Packaging Height	31.0 mm

Packaging Data

Show Errors: ☐ Filter:

Quantity	
Property	Value
LGTIN	urn:epc:class:lgtin:4064074.000025.RltDTbHJ75v8sS6fKKrQ
General Information	
Property	Value
Production Step	Packaging production
Object Form	3D (rigid packaging)
Packaging Type	Cup/Tub/Bowl
Packaging Name	Becher mit Lidding (aus PP_T, Virgin)
Basic Properties	
Property	Value
Packaging Weight	6.3 g
Density	0.900 g/cm³
Packaging Length	77.0 mm
Packaging Width	80.0 mm
Packaging Height	31.0 mm

Conclusions & outlook

Conclusions:

- The interplay of openLCA and onlineLCA works well
- Complex LCA models can be made available for non-LCA experts
- Calculations can be made based on DPPs drawn from DPP repositories

Outlook:

- EcoOptiPack: Other tool modules are planned (Connection to CAD software, manufacturing machine module, re-use, perceived sustainability)
- API will be used by project partner HITeC e.V. with LLMs
- onlineLCA:
 - openLCA models can be easily converted into LCA tools
 - The same tool layout will be applied to the EPD tool of the Global Cement and Concrete Association (GCCA)

Thank you for listening!

GreenDELTA

Dr.-Ing. Friedrich Halstenberg
Mail: halstenberg@greendelta.com



Dr.-Ing. Anna Kerps
Mail: anna.kerps@umsicht.fraunhofer.de