

Vollautomatisierte Aufbereitung von PV-Modulen für einen zweiten Lebenszyklus

DI SIMON PRÜLLER



CLEAN ENERGY!

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4 billion solar panels currently in place
3 million solar panels being installed per day

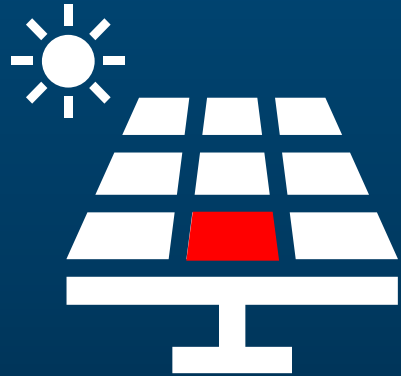




Lifespan PV-Modul:
25-35 years

VS.

Lifespan PV-plant:
12-20 years



„Defects“



„Repowering“

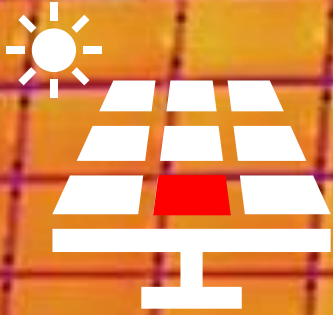


„Environmental
disaster “

DEFECTS



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REPOWERING



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ENVIRONMENTAL DESASTER



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TEAM

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DI Simon Prüller
CO-Founder & CEO

Mechanical
Engineering
MBA in Progress



Ing. Gerald Eichler
CO-Founder & CEO

Automation /
Software



DI Michael Prüller
CO-Founder

Mechatronic /
Data-Scientist



DI Jakob Anger
CO-Founder

Engineering Physics



DI Simon Schauppenlehner
CO-Founder

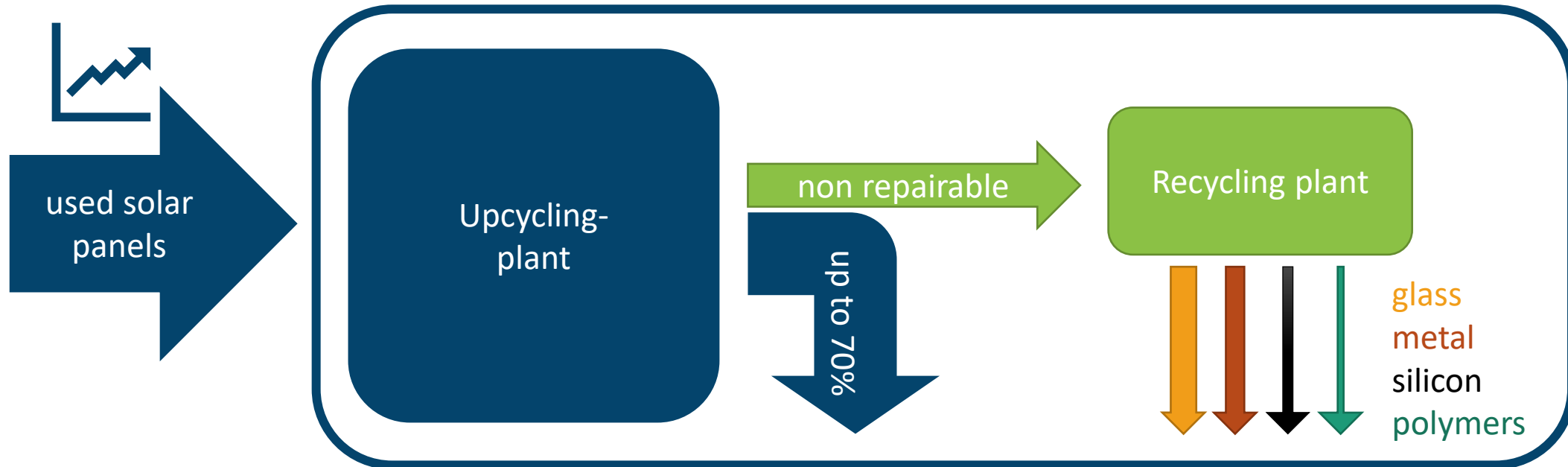
Electrical Engineering /
Software



DI Michael Altrichter
CO-Founder & Investor

Business Development





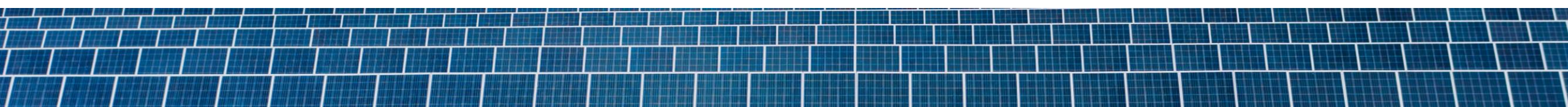
Test protocol



REUSE



RECYCLE

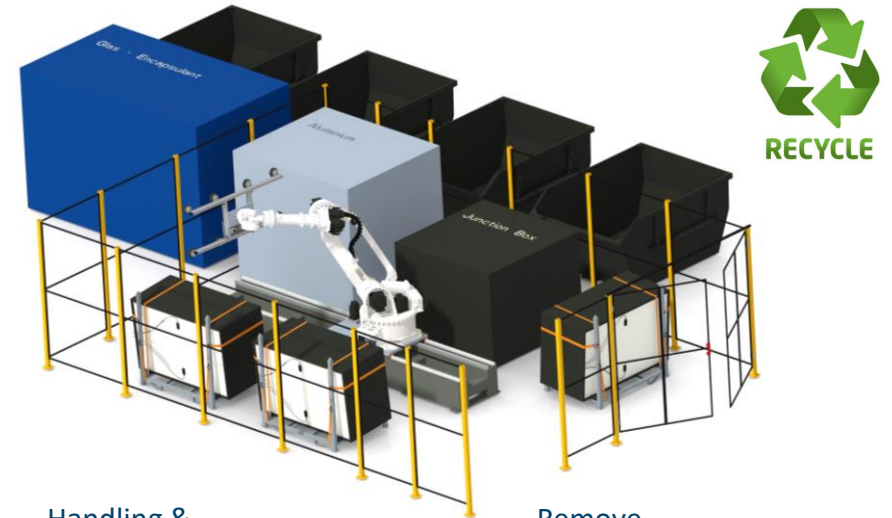
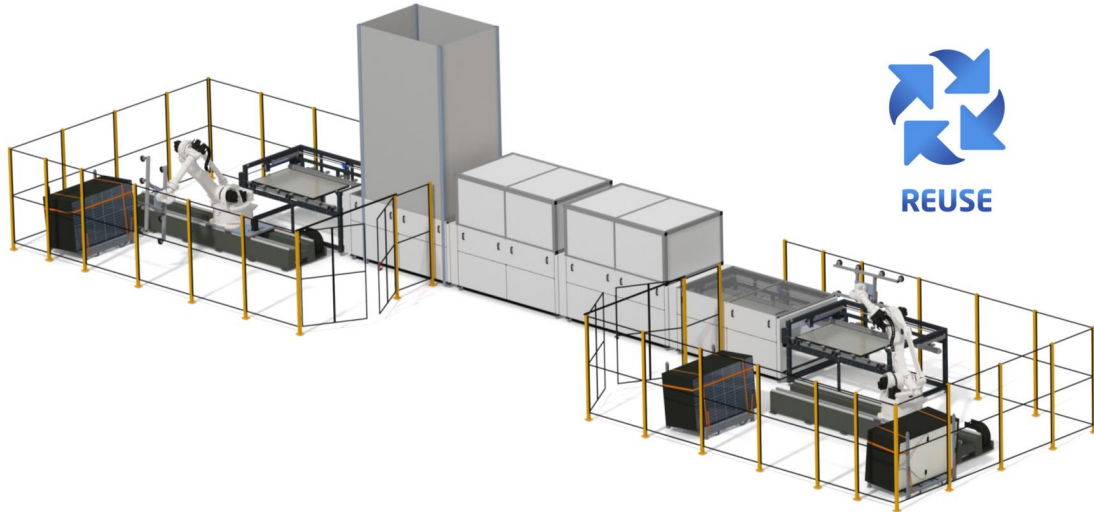


SOLUTION



Upcycling Plant

Recycling Plant



Handling & identification

Testing

Marking & test report

Reuse

Handling & Pre-Testing

Remove frame

Recycling

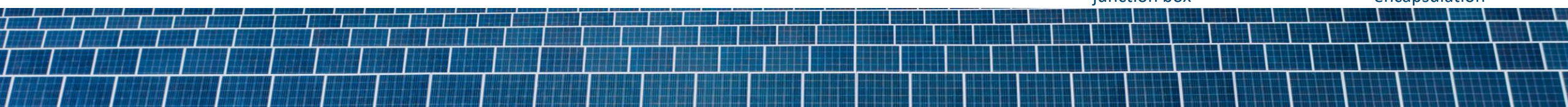
Cleaning

Repair

Decision

Remove junction box

Separate glass encapsulation

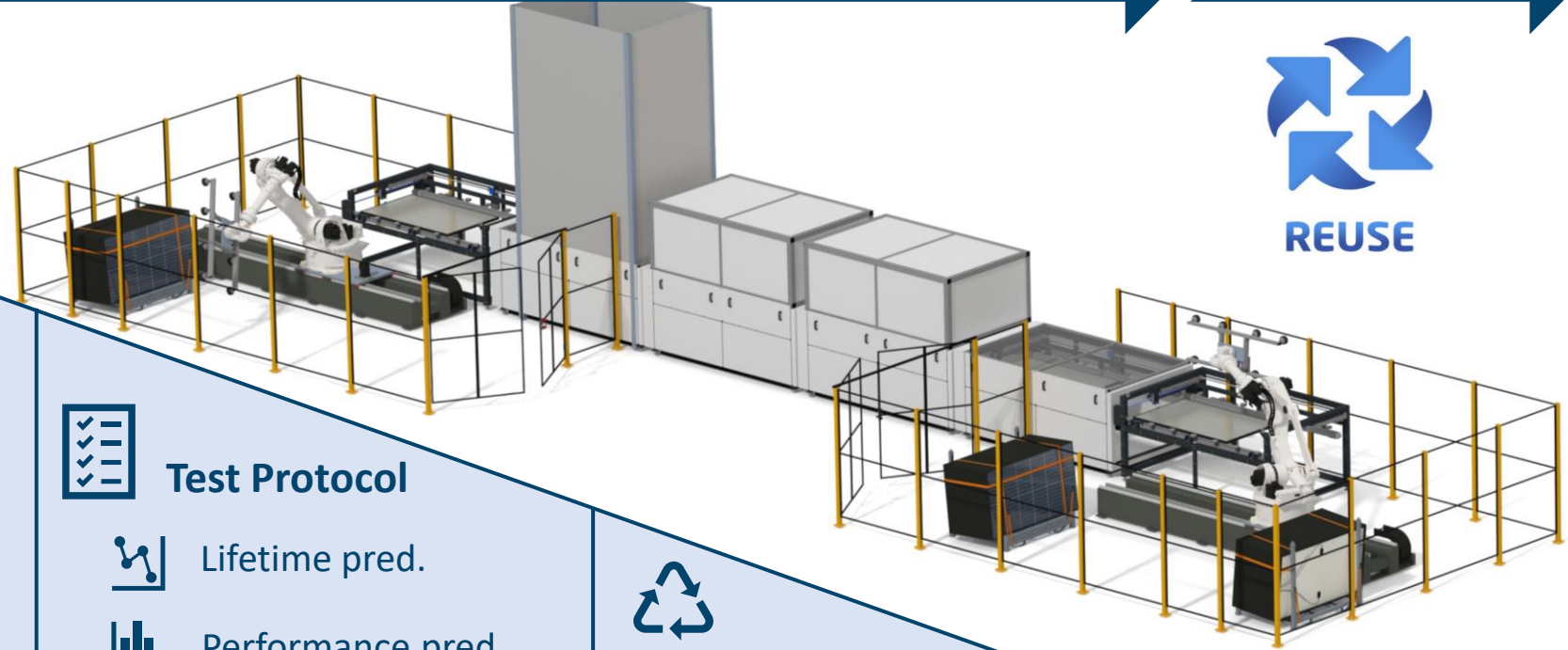


Upcycling Plant



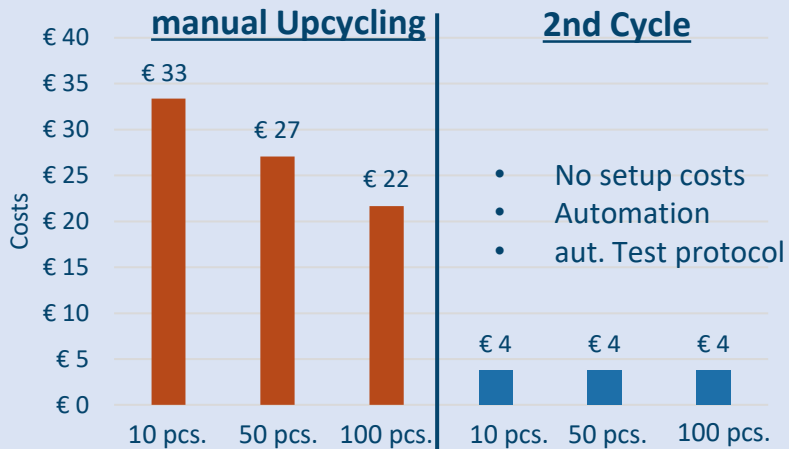
Upcycling Plant

Recycling Plant



Massive cost reduction up to 80%

Cost comparison manual Upcycling vs. 2nd Cycle



Test Protocol

- Lifetime pred.
- Performance pred.
- Value assesment
- Material composition



Modul Upcycling

- Replacement of connectors
- Replacement of bypass diodes



State of development

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 **2nd cycle**
for pv-modules



Logistics / Handling / Identification



Trinasolar
The power behind the panel

TSM-245PC05 Made in China

Maximum Power (P_{max})	245W ₀ ^{+3%}
Maximum Power Voltage (V_{mp})	30.7V
Maximum Power Current (I_{mp})	7.98A
Open Circuit Voltage (V_{oc})	37.3V
Short Circuit Current (I_{sc})	8.47A
Maximum System Voltage	DC1000V
Maximum Series Fuse	15A
Module Application	Class A

For field connections, use minimum 4mm² copper wires insulated for a minimum 90°C

Electrical Rating At STC
AM=1.5 IRRADIANCE=1000W/m² Temp.=25°C

CE   Electrical Hazard

This module produces electricity when exposed to light. Follow all applicable electrical safety precautions.

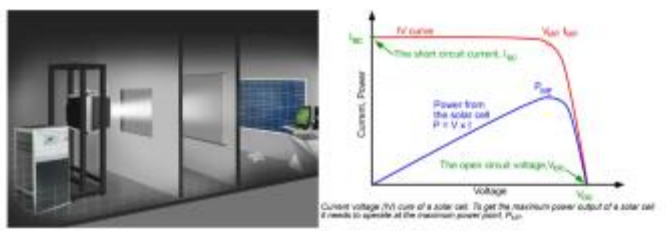
Trina Solar (Changzhou) Science & Technology Co., Ltd.
www.trinasolar.com

Testing

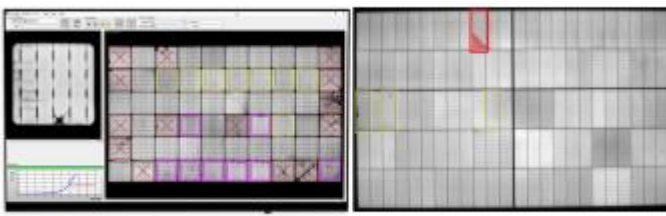


electrical contact

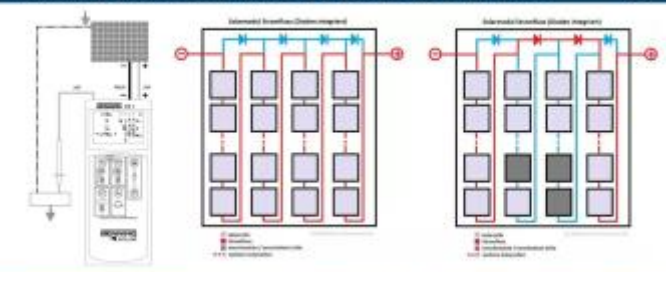
Flash-Test / dark I-V curve



EL-Test



Insulation Resistance Test / Bypass Diode Test / Frame Continuity Test



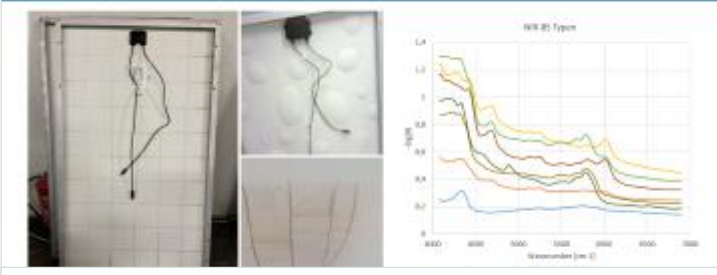
AI-powered data analysis

Test Protocol:


- Lifetime pred.
- Performance pred.
- Value assesment
- Material composition

non electrical contact

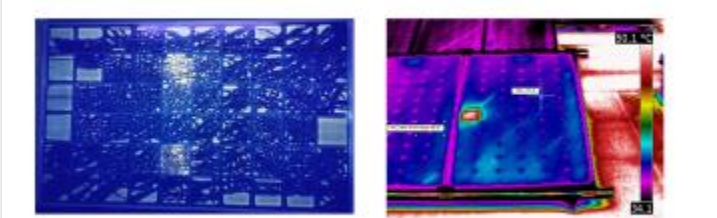
NIR Spektroskopie



Visual Inspection




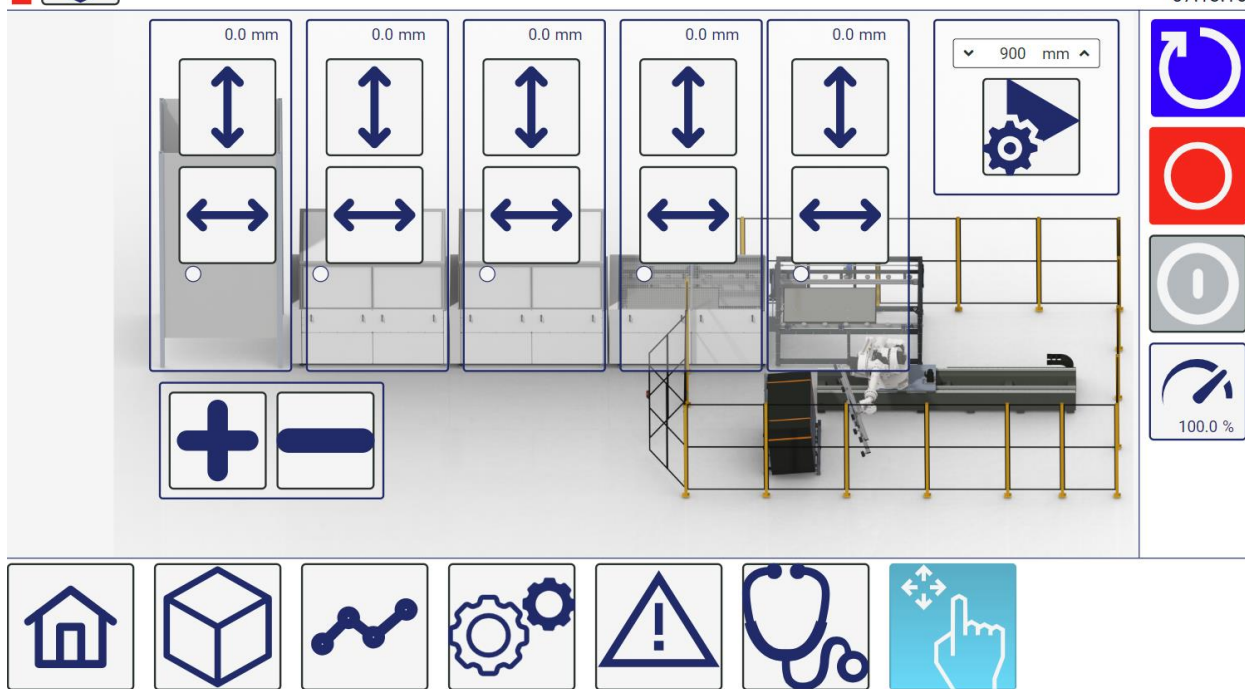
UV Fluorescence / Thermographie



Visualization / Database



Production Stopped  12.09.2024 07:13:16



2nd Cycle Database

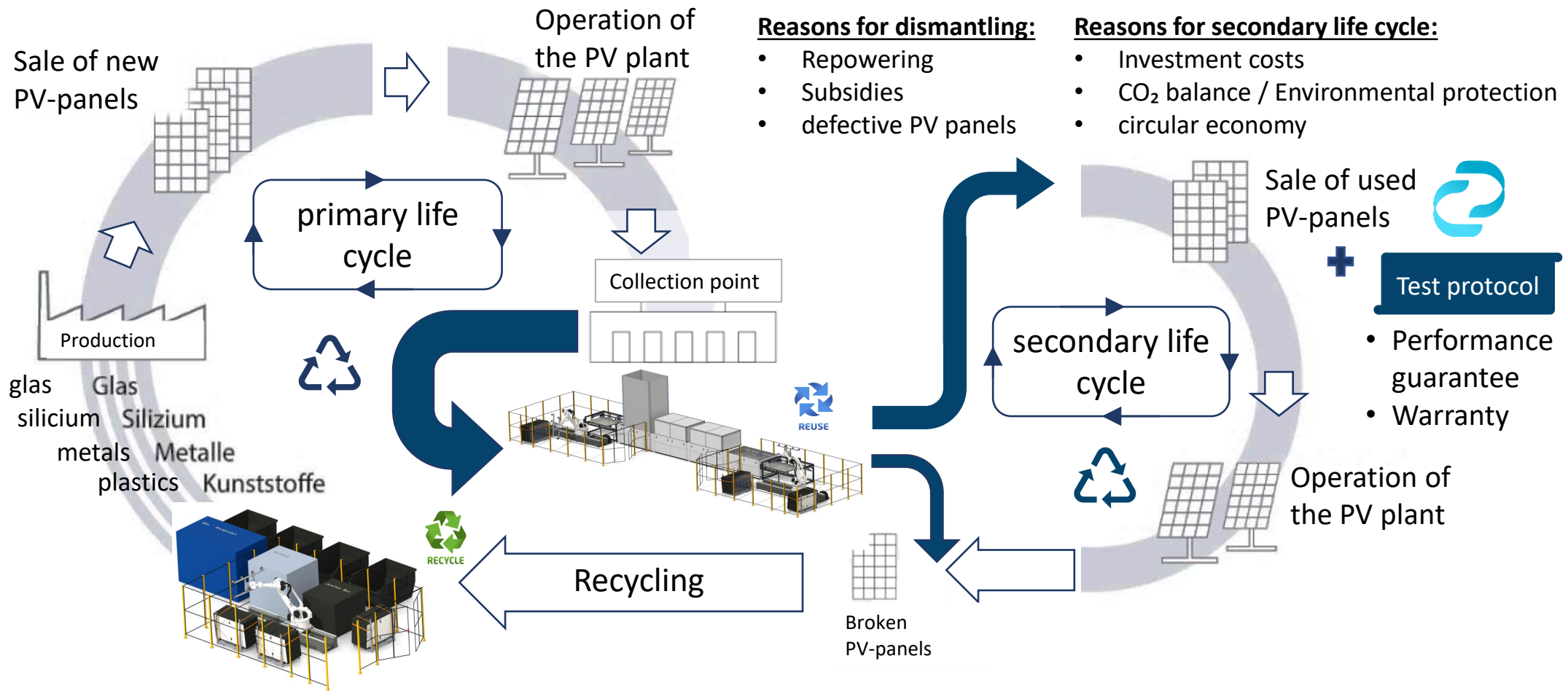
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EXPORT QR-CODE
CREATE MODULE
EDIT MODULE

[Modules](#)
🔍 Search UID

- Groups
- Instruments
- Module types
- Manufacturers
- Datasheets
- Datasheet properties
- Type labels
- Type label properties

<input type="checkbox"/>	Id	Created	Edited	UID	Status	Module Type
<input type="checkbox"/>	1	01.08.2024 15:30:18	07.11.2024 11:21:10	1-7f1bc949	In use	Risen RSM40-8-400M
<input type="checkbox"/>	2	01.08.2024 15:30:22	07.11.2024 11:21:10	1-04f2eb64	In use	Unbekannt P190/6
<input type="checkbox"/>	3	01.08.2024 15:30:23	07.11.2024 11:21:10	1-077a01f8	In use	
<input type="checkbox"/>	4	01.08.2024 15:30:26	07.11.2024 11:21:10	1-448aac31	In use	
<input type="checkbox"/>	5	01.08.2024 15:30:26	07.11.2024 11:21:10	1-ff164146	In use	
<input type="checkbox"/>	6	01.08.2024 15:30:26	07.11.2024 11:21:10	1-29253097	In use	
<input type="checkbox"/>	7	01.08.2024 15:30:26	07.11.2024 11:21:10	1-c1104d42	In use	
<input type="checkbox"/>	8	01.08.2024 15:30:26	07.11.2024 11:21:10	1-50e49926	In use	UpSolar UP-M240P
<input type="checkbox"/>	9	01.08.2024 15:30:26	07.11.2024 11:21:10	1-c6b9929c	In use	UpSolar UP-M240P

PV Circular Economy



VISION



„ Maximizing the power output of every solar panel out there through innovative technology for reuse and recycling“

Goals until 2030:

- Worldwide over **20 upcycling/recycling plants**
- We want to save **0,12 mio tons of PV Waste**
- We want to save **1 mio tons of Co2**



Contact us!

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