

# Innovations.

Tobias Eder  
Sesotec – Sorting Recycling





# Who we are



Founded 1976

HQ located in Schönberg, Germany

3 Business Units

89 mio € turnover

630 employees

10% R&D quote

83.000 Systems installed

10 Locations worldwide

60 countries with sales partners

# Closing the loop

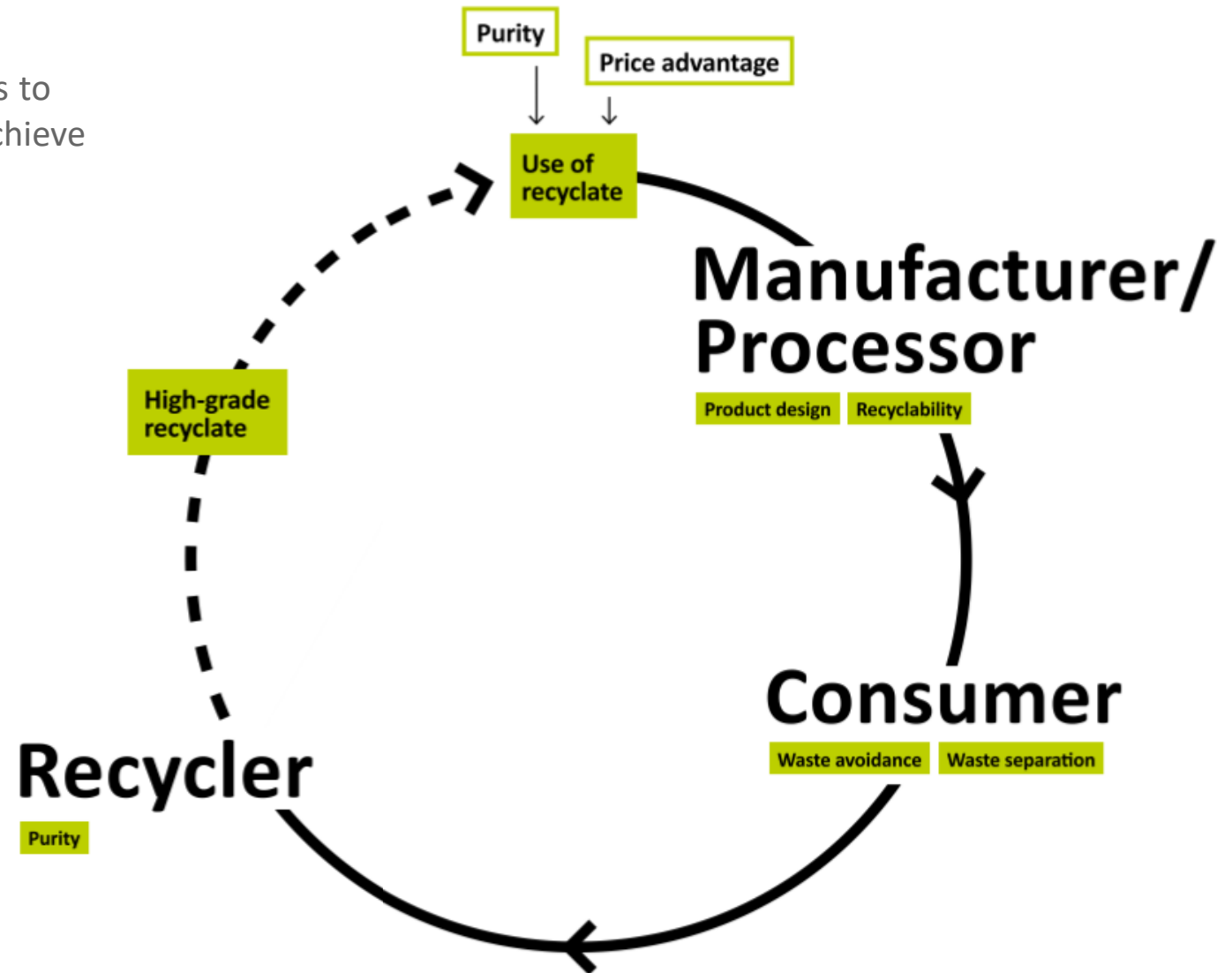
All stakeholders – from manufacturers and processors to consumers and recyclers – need to do their part to achieve a true circular economy

Key to success:

- Profitability – the financial advantage

Achieved by:

- Quality – top-flight purity
- Efficiency – excellence in production

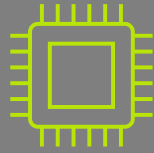


Because  
Earth Deserves  
Better.

SUSTAIN  
Technologies

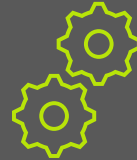
# AI - Really an innovation?

First breakthrough in the development of AI took place in 1956.  
But in the 1980s, AI experienced a so-called “AI-winter”.



## ARTIFICIAL INTELLIGENCE

Engineering of machines  
that mimic cognitive functions



## MACHINE LEARNING

Ability to perform tasks  
without explicit instruction  
and relying in patterns

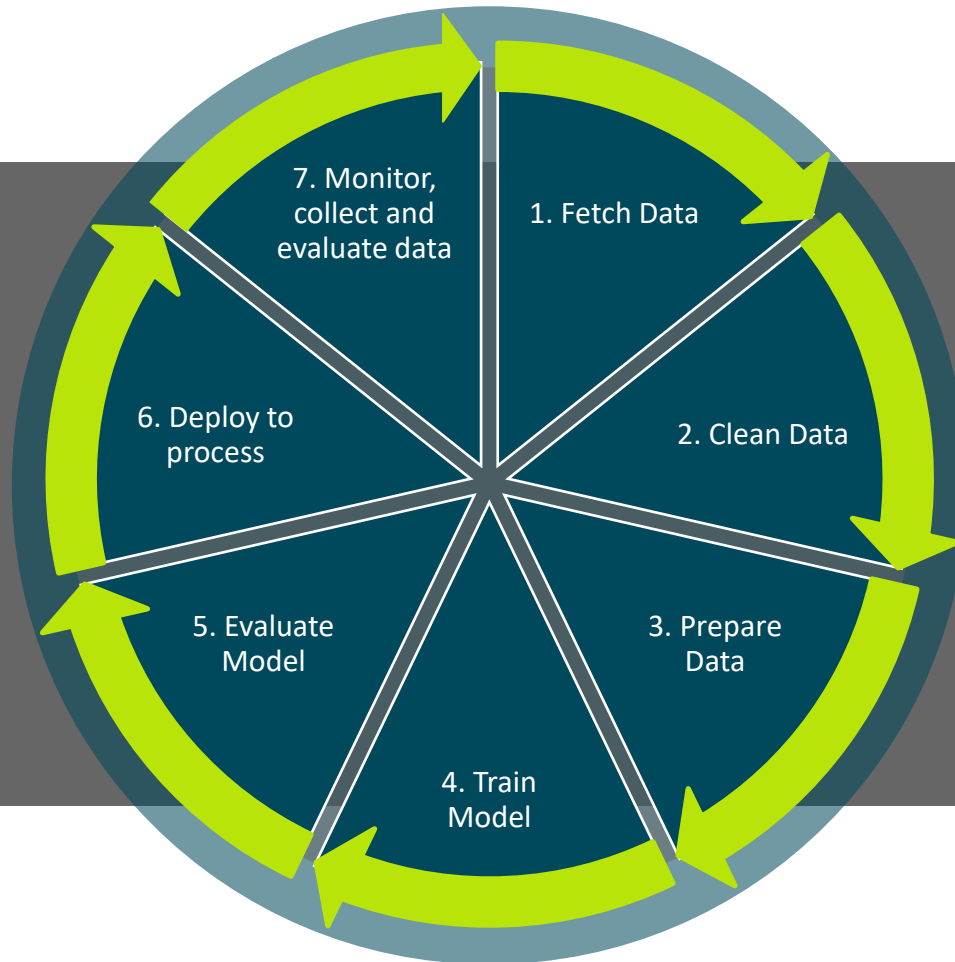


## DEEP LEARNING

Machine learning based  
On artificial neural networks

The terms artificial intelligence (AI), machine learning (ML) and deep learning (DL) are often used interchangeably.  
However, DL is actually a sub-area of ML and ML in turn a sub-area of AI.

# AI - Basics



## AI- Toolbox

Neural Network

Convolutional Neural Network

Object Detection

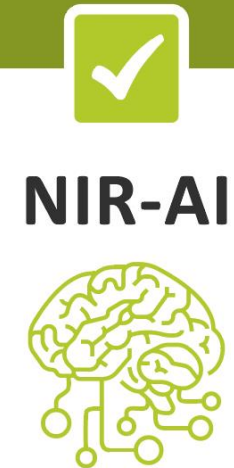
Instance Segmentation



# Sesotec – Sorting Innovations

## Object Detection

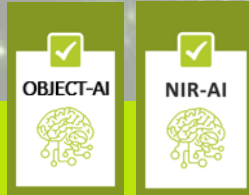
BASED ON  
**ARTIFICIAL INTELLIGENCE**



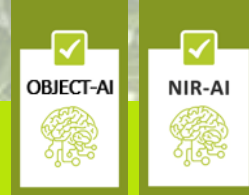
## NIR Detection

BASED ON  
**ARTIFICIAL INTELLIGENCE**

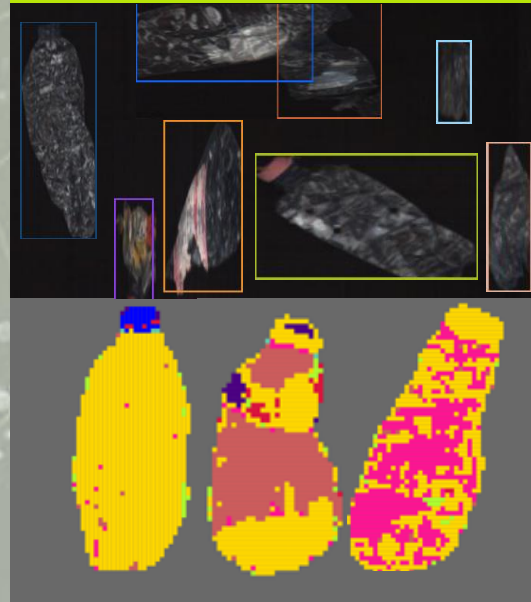
# Applications



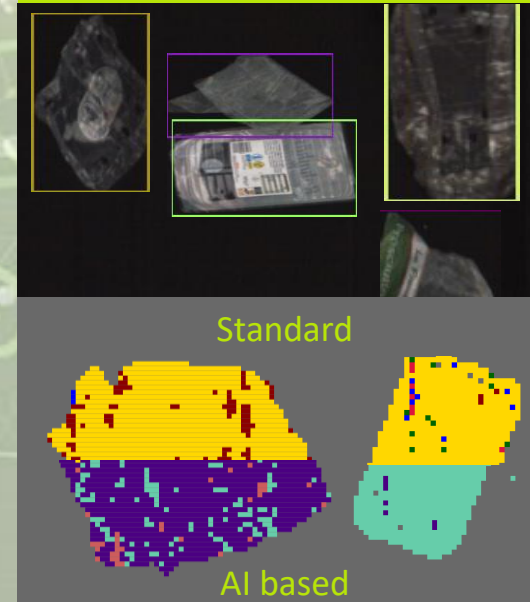
**Bottle / Tray**  
**Sorting**



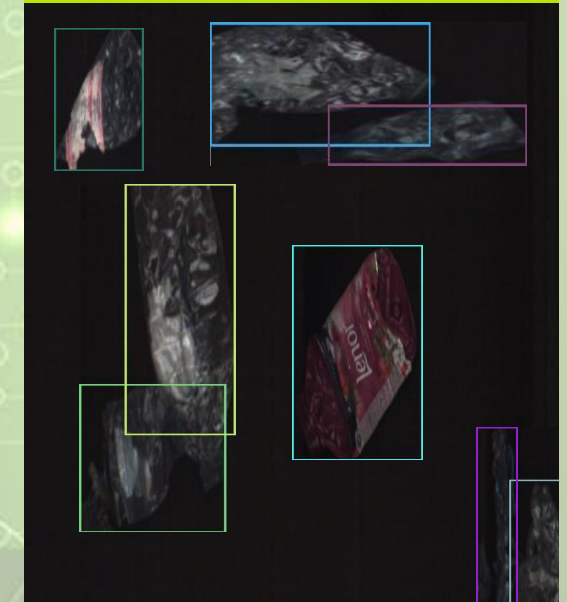
**Bottle**  
**Mono / Multi / Additives**



**Tray**  
**Mono / Multi**

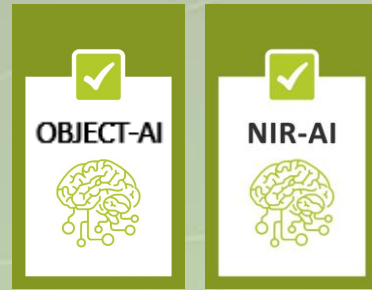


**Food / NonFood**





# Bottle / Tray Sorting



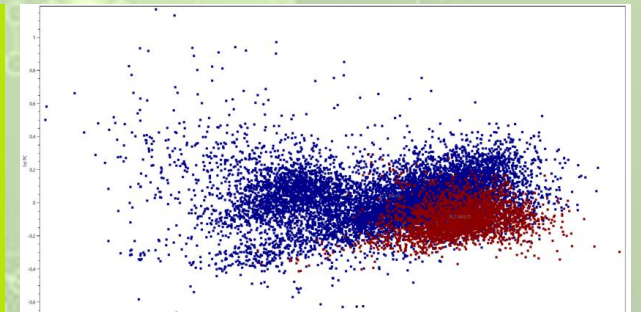
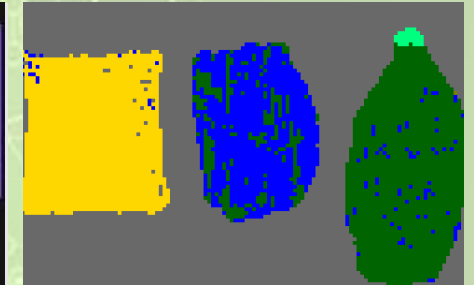
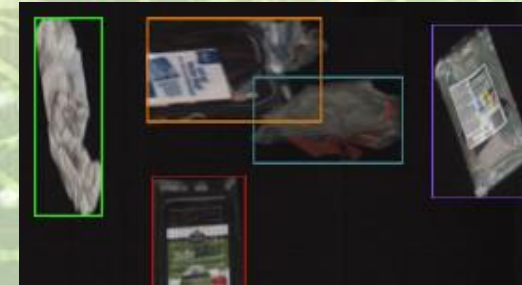
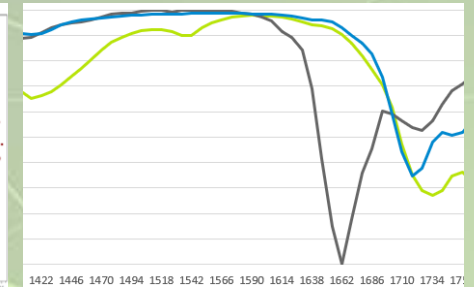
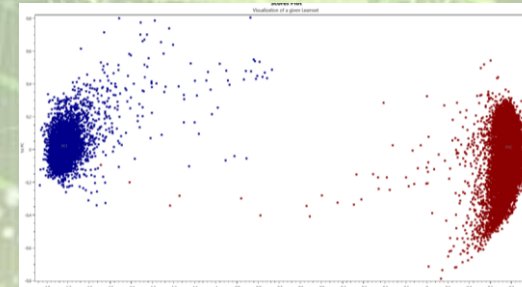
Improved differentiation of very similar polymer spectra  
(NIR-HSI) possible

Sorting out specific impurities becomes possible

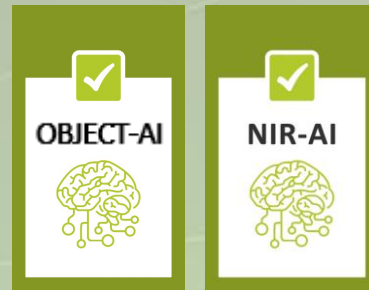
AI offers better and more stable visual differentiation

Quick adaption to new requirements

Retrofit on all sorting machines equipped with the  
Sesotec NIRCAM or by our VARISORT+ FLEX possible



# Mono- / Multilayer Bottles



High sensitivity for even small amounts of impurities in the good material (PET vs. PET+PA / PET+PE)

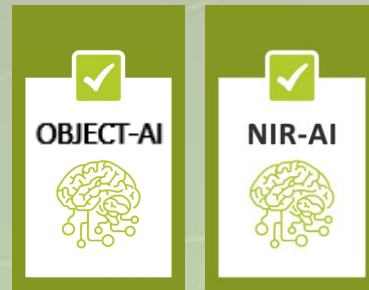
Detection of PET bottles with certain additives

Solution for possible problems in the future  
(new types of packaging, biobased polymers,...)

Retrofit on all sorting machines equipped with the  
Sesotec NIRCAM or by our VARISORT+ FLEX possible



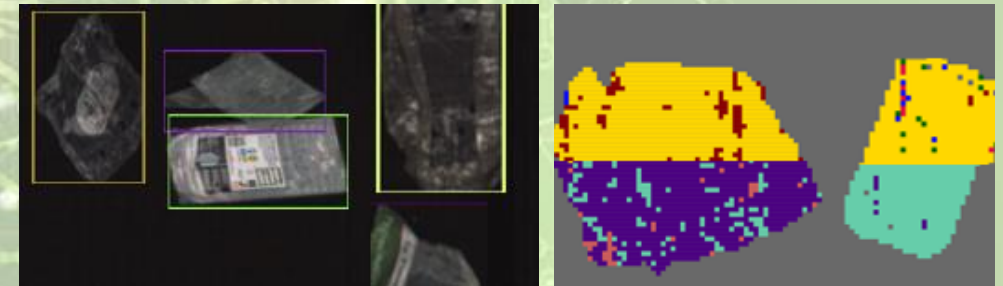
# Mono- / Multilayer Tray



Differentiation of very similar polymer spectra possible  
(Monolayer Trays – Multilayer Trays)

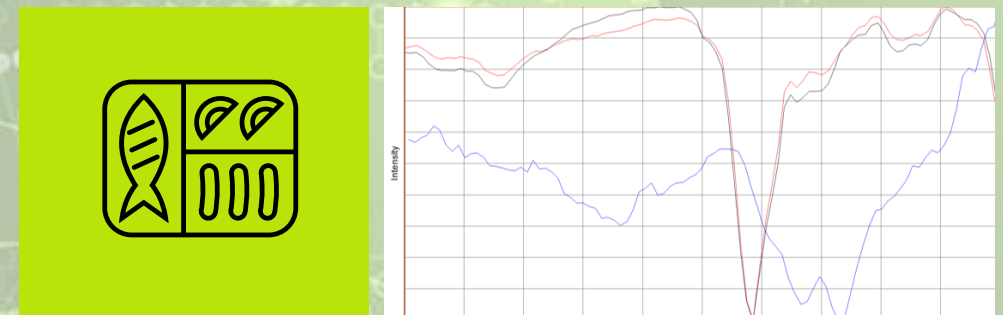


Differentiation based on object properties



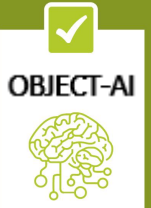
Combination of NIR-AI and Object-AI possible

Retrofit on all sorting machines equipped with the  
Sesotec NIRCAM or by our VARISORT+ FLEX possible





# Food / NonFood Sorting



No sorting possible with the use of NIR analysis

Differentiation of food / non-food articles possible based on object properties

Solution for tomorrow's problems,  
(if shampoo bottles are to be integrated in DRS system)

Retrofitting is possible for all sorting devices or conveyor belt / separator housing combinations using our VARISORT+ FLEX systems



# Sorting machines



 Color sensor

 Metal sensor

 NIR sensor

## VARISORT+ FLEX



The VARISORT+ FLEX is suitable for integration in existing plants as a renewal or upgrade and for suppliers of complete solutions.

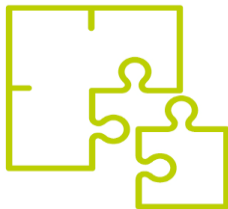
### Flexible

Conveyor belt can be supplied by the customer or by the equipment manufacturer.

Subsequent sensor upgrades possible at any time.

New AI-features can be easily adopted.

Flexible sensor & valve bar combination for plastic & light packaging recycling



### Free consultation

<https://www.sesotec.com/emea/en/contact-form>



# Sorting machines



## VARISORT+ UNITY



The VARISORT+ UNITY is ideal for customers who prefer a complete sorting solution with coordinated components from a single source.

### Efficient

Material throughput rate up to **8 t/h.**

Optimized for high system availability, quick cleaning, and minimal maintenance.

Up to **99% removal accuracy** for a high purity in sorted fractions.

Reliable detection and separation in 2 or 3 fractions in one step.



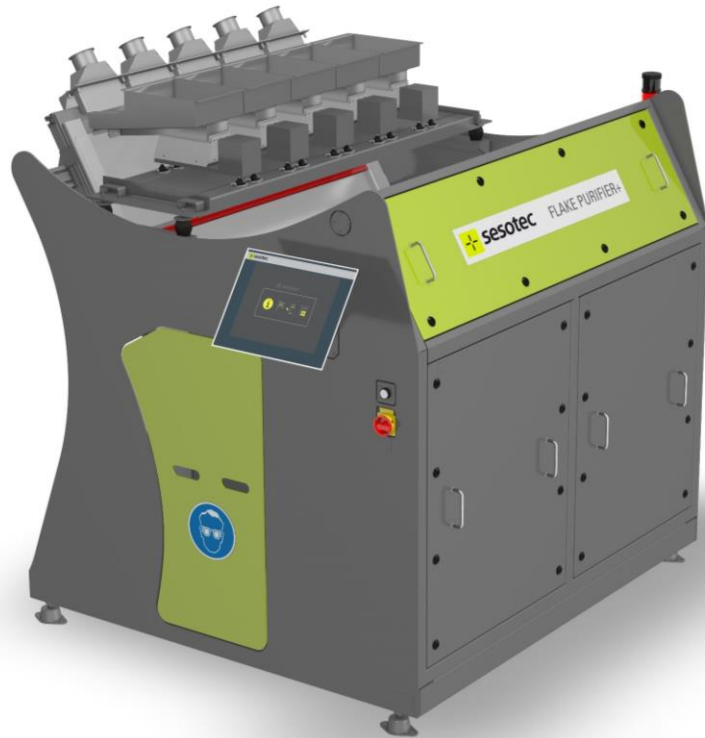
### Free consultation

<https://www.sesotec.com/emea/en/contact-form>





# Sorting machines



## PURIFIER+



Color  
sensor



Metal  
sensor



NIR  
sensor

The high-precision PURIFIER+ sorting system ensures maximum purity of high-quality flake and regrind material streams.

### Precise

Material throughput rate up to **3.8 t/h.**

Simultaneous sorting of multiple foreign plastics.

Up to **99.999% removal accuracy** for a high purity in sorted fractions.

Reliable detection and  
sorting of plastic flakes and  
regrind



### Free consultation

[https://www.sesotec.com/emea/en/  
contact-form](https://www.sesotec.com/emea/en/contact-form)



# Sorting machines



## FLAKE SCAN



**C** Color  
sensor

**M** Metal  
sensor

**N** NIR  
sensor

For manufacturers and processors of plastics, ensuring consistently high material quality is a decisive profitably factor.

### Profitable

Eliminates the need for intensive laboratory sample analysis.  
Enables quick and informed decisions about the viability of plastic flakes.  
Provides valuable insights in the recycling process ant the functionality of the whole plant.

Quality anlysis of plastic flakes and regrinds – within minutes



More information  
<https://www.sesotec.com/emea/de/lp/flake-scan>



# Stay curious



Meet us at  
**IFAT**  
Munich  
Hall 5, booth 415/514

## more is yet to come





Meet us at



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