PFINDER
CHEMIE

Minimization of impacts on the user's health and the environment by PT and MT consumables

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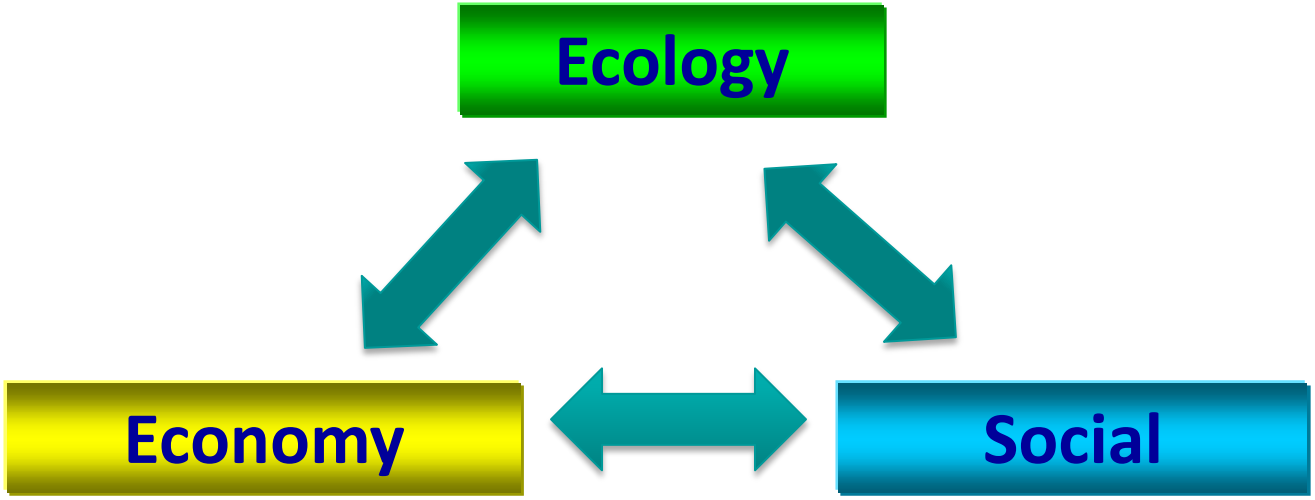
Kersten Alward, Business Unit Manager NDT

Definition sustainability

Sustainability considers three dimensions as being of equal value.
No process is sustainable that does not consider all three dimensions.



Important question: How can simple / practicable measures be derived from this for a manufacturing process?

Translation sustainability of processes

In relation to PT and MT processes, the following simple interpretation can be applied:

Environmental impact

Costs

Impact on the staff

Fields of activity: Environmental impact

Environmental impact

- Solvent/ VOC-content
- Biodegradability
- Carbon Footprint (Global warming potential)
- Renewable/ recyclable raw materials
- Generated waste

Fields of activity: Costs

Costs

- Process material cost
- Investment cost
- Inspection effort
- Energy cost
- Service-/maintenance cost

Fields of activity: Impact on the staff

Impact on the staff

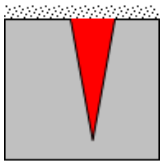
- Labeling
- Flammability
- Allergic skin reaction
- Health hazard (inhalation, ingestion)
- Visibility and interpretability of indications

Sustainability evaluation of a PT process

Penetrant application

Penetration time

Excess penetrant removal



Developing

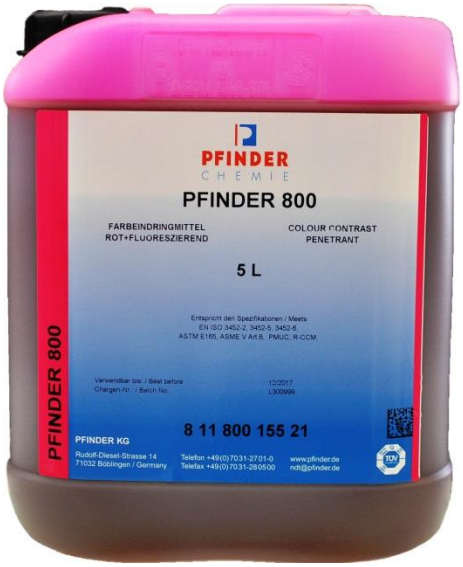
Inspection / Interpretation

Sustainability evaluation of a PT process

Semi-automatic line for penetrant testing for process simulations at PFINDER‘s headquarter, Böblingen / Germany

Sustainability evaluation of a PT process

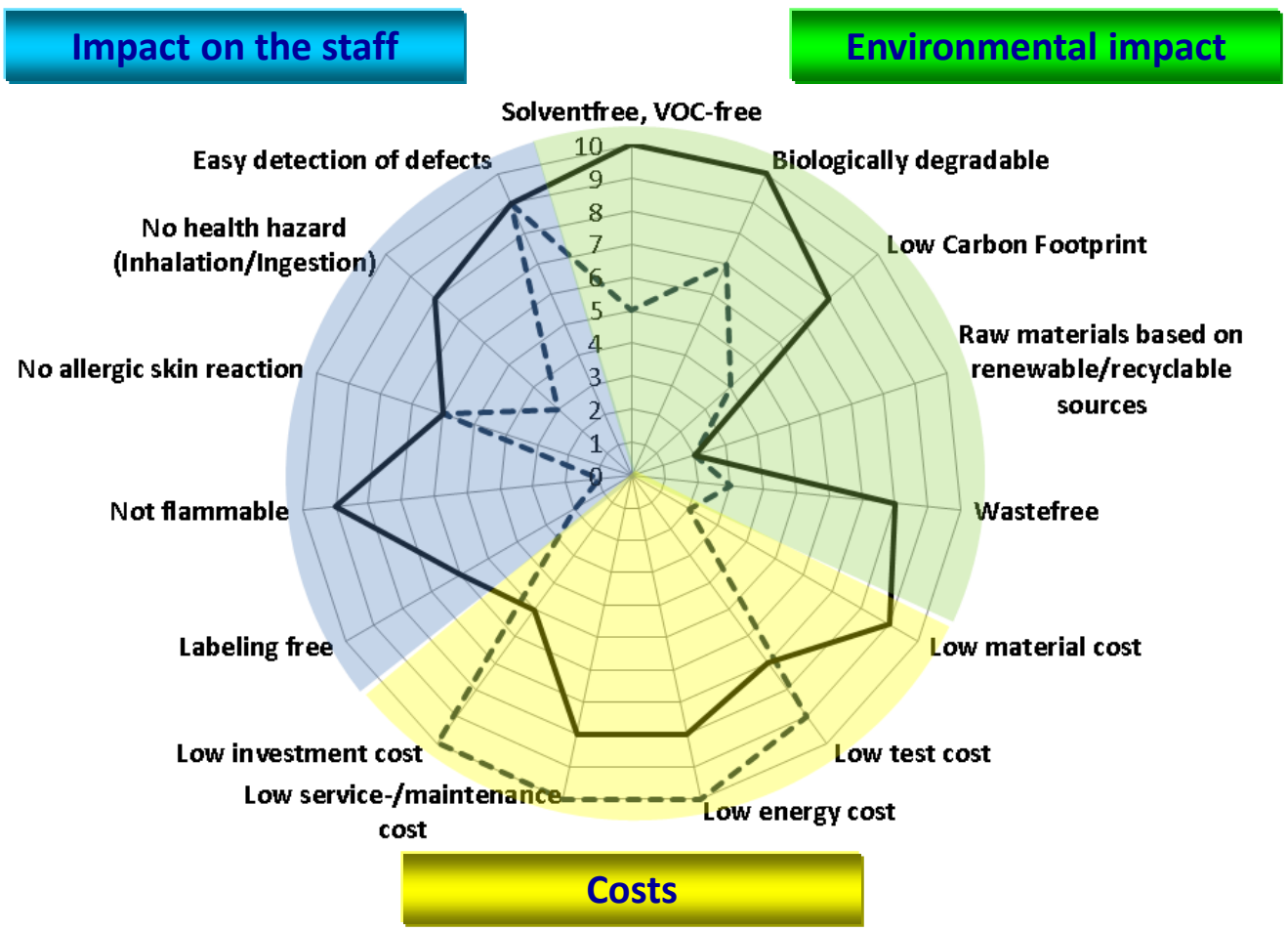
PFINDER 800
Type II+III / red and fluorescent penetrant
sensitivity class 2



5 L
PE canister

500 mL (net.)
aerosol spray can

Sustainability evaluation of a PT process



Rating:

10 = definitive

1 = unincisive

PFINDER 800 bulk

PFINDER 800 aerosol spray can

Carbon footprint evaluation
PFINDER 800

Carbon footprint:
Indicates the production of carbon dioxide during the life cycle of a product.

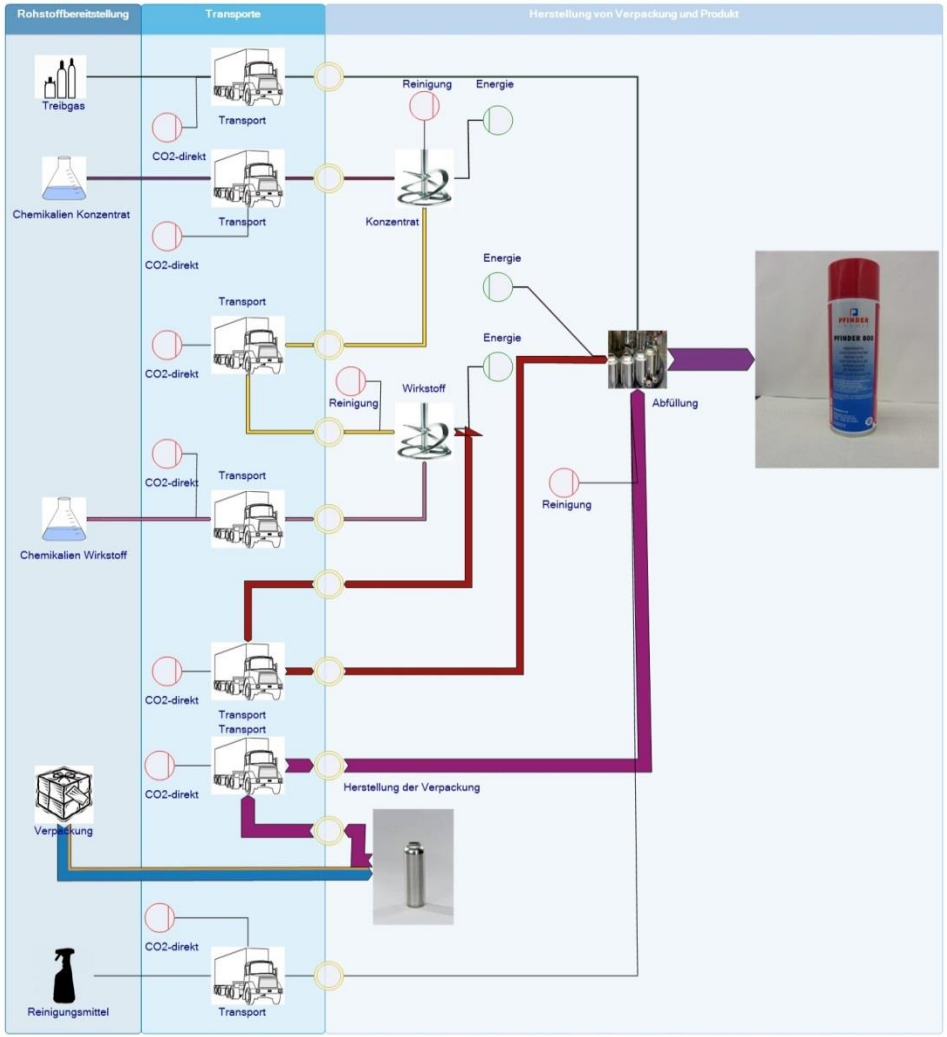
Provides information about the consumption of fossil fuels

Relates to the Global Warming Potential (GWP) of a product.

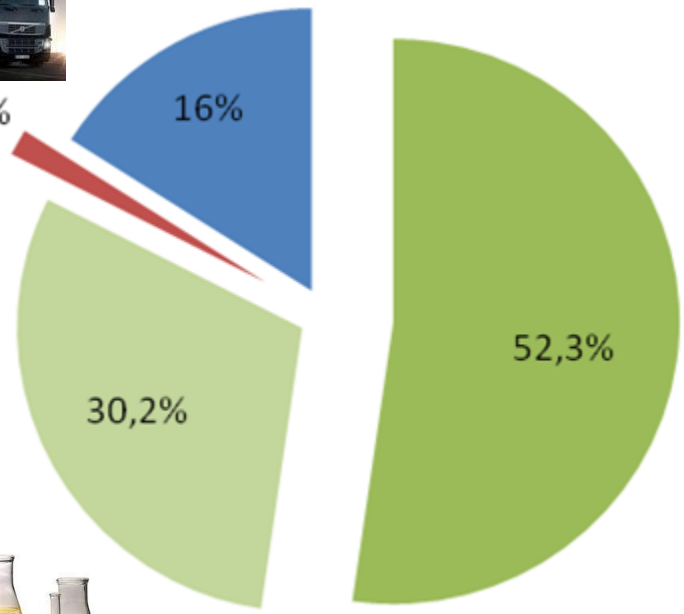
Assessed Carbon footprint balancing:

“From the cradle to the gate”

Carbon footprint evaluation
PFINDER 800

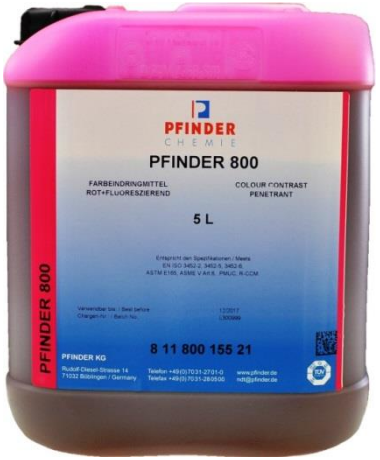


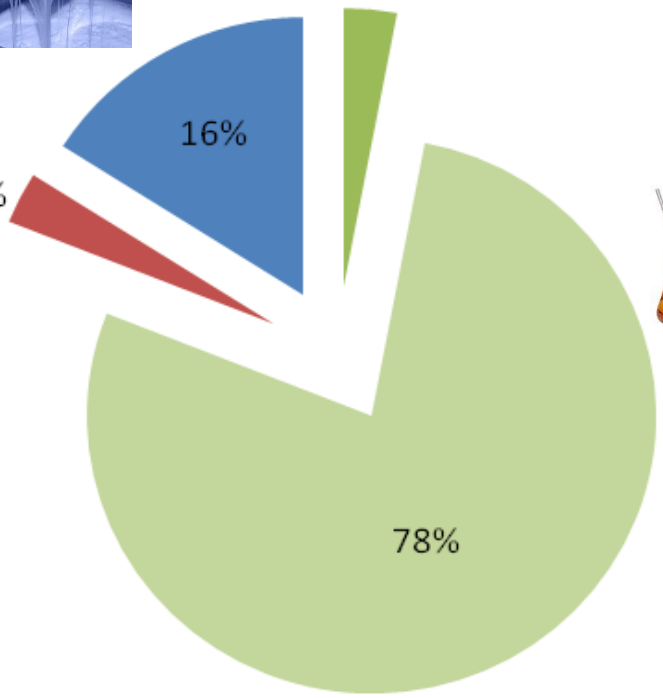
Carbon footprint evaluation
PFINDER / 800 - 500 mL aerosol spray can



- Raw materials (spray can)
- Raw materials (active component)
- Transport
- Manufacturing

Carbon footprint evaluation
PFINDER / 800 - 5 L PE canister





- Raw materials (canister)
- Raw materials (active component)
- Transport
- Manufacturing

Summary carbon footprint evaluation PFINDER 800

Packaging	Carbon Footprint per package	Carbon Footprint per kg of active agent
500ml Aerosol	3,08 kg	12,0 kg
5 L PE canister	20,5 kg	4,20 kg

- 500 mL aerosol spray can:
  Over 50% of the carbon footprint related to the can material
- 5 L PE canister:
  35% of the carbon footprint of the aerosol can, due to packaging material
- The comfort of using an aerosol can causes a higher carbon footprint

Prevention, reduction, compensation

- PFINDER offers special application technologies, preventing the use of aerosols
- Users of penetrant and magnetic particle products in aerosol spray cans often have no other choice due to working / application conditions
- PFINDER has decided to minimize the carbon footprint of the PFINDER NDT products filled in aerosol spray cans by supporting compensation measures

Cooperation with atmosfair

think • go climate conscious
atmosfair

- atmosfair uses these contributions to develop renewable energies in developing countries. In this way, atmosfair saves CO2 that would otherwise be created by fossil fuels in these countries.
- 90 % of atmosfair's carbon offset projects adhere to the CDM Gold Standard (strictest standard available for climate protection projects)

Waste water treatment

- Penetrant testing processes usually creates vast quantities of waste water
  - usually categorized as “hazardous waste”
  - needs a special treatment

- Penetrants on water base or free of mineral oils are not automatically biodegradable

- Special penetrant’s composition necessary
- Certificates have to attest the biodegradability according EN / ISO standards
- Authorities might allow the sewage disposal into the canalization system

- Situation in Germany: Direct discharge into sewerage
  - 80% of users of FPI testing lines (automotive)
  - Increasing number of users of red dye penetrants
- **Strong improvement for environmental protection and for significant process cost savings**

Free of danger symbols

- Due to the change of regulations (Reach, GHS / CLP) the labeling and categorization of chemicals is strongly tightening.

- PFINDER keeps working hard to increase the number of NDT consumables which are not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials.

- Latest product (re-)lauchnes “free of danger symbol”
  - PFINDER 240: Black MPI suspension / aerosol spray cans
  - PFINDER 100 / 101: Fluorescent MPI concentrates
  - PFINDER 555: Low viscosity carrier oil for MPI

- **Strong improvement for user’s safety**

Summary

- A practical rating system has been developed for the sustainability evaluation of consumables for PT- and MT-testing
- Pfinder is constantly improving their products in the three relevant aspects:
  - **Impact on the staff**
  - **Impact on the environment**
  - **Costs**
- The carbon footprint evaluation has shown that the package system cannot be neglected
- The sustainability evaluation allows a choice of a testing system with minimal impact on the user and the environment with optimal costs

Outlook

- Users of penetrant and magnetic particle products in aerosol spray cans often have no other choice due to working / application conditions

- PFINDER offers NDT-consumables filled in aerosol spray cans with minimized carbon footprint by supporting compensation measures.

- Low impacts on environment and the user's safety are top priorities in the product development of PFINDER.
- Significant process cost savings can be achieved at the same time.

Users have now the opportunity to make a conscious decision for

✓ higher user's safety

✓ lower impact to the environment

✓ significant process cost savings