



## **Karin Verploegen – Representing Gispem**

Sustainable Product and Service Upgrades

*18 October 2016, Brussels*



# OVERVIEW

Gispen & TNO

## TNO

TNO connects people and knowledge to create innovations that boost the sustainable competitive strength of industry and well-being of society. This is our mission and it is what drives us, the 2,600 professionals at TNO, in our work every day.



## Gispen

We are Gispen. Everything that involves furnishing spaces and producing innovative and sustainable products. By this method, we create optimum environments for working and living, where people thrive. Mission: Inspire and motivate as many people as possible with well-designed products and cleverly furnished spaces.



# OVERVIEW

## Involvement UIW



## Gispén

- Design, production and installation of office interior design
- Customers: government, banks, ICT services, universities,
- Role in the project: end user
- disciplines involved: management, marketing, sales, R&D, design& engineering; supply chain

## TNO

- Dutch Institute for Applied Research
- Role in the project: cluster leader
- experts involved: business modelling; circular economy; design for modularity; life cycle analysis



# OUTCOMES

## Design Framework

### Aim

Prolong functional and qualitative lifespan of furniture by implementing the principles of Circular Economy.

### Solution

It all starts with the design of a product. New requirements in order to maintain, upgrade, remake and eventually recycle the product as effective as possible. Hence, product design for multiple periods of use.

## DESIGN FRAMEWORK

### Stakeholders

Tested and found beneficiary by various stakeholders. Client, product designer, engineer and product manager.

COMPARE AND IMPROVE DESIGN FOR CIRCULAR USE CONTINUOUSLY  
THROUGH SCORING METHOD



# OUTCOMES

Design Framework

## DESIGN FRAMEWORK

Gispen

BASE  
BRANCHE  
REQUIREMENTS

DESIGN FOR

Material

Disassembly

Logistics

Maintenance & Upgrade

Re-use

PROCESS

Reversed Logistics

Manufacturing



# OUTCOMES

C-LCA Tool

## Aim

Measure effects of material use & CE scenarios on environmental impact.

## Solution

Awareness of material choices and the possible benefits of remanufacturing can only be advanced with a tool that calculates the effects of re-use and material choices.

## CIRCULAR LIFE CYCLE ASSESMENT

## Stakeholders

Sales, Design & Engineering (R&D) departments and of course the end user.

REAL SUSTAINABLE CHOICES INCLUDING REUSE AND REMANUFACTURING  
MEASURED AND COMPARED



# OUTCOMES

## C-LCA Tool

### Structure

The C-LCA Tool is based on a normal LCA tool. Additionally various reuse scenario's are added, providing Gispem the possibility to calculate the environmental impact over multiple use times.



### Results

The calculations provide insight in the environmental impact of material choices combined with re-use. Various options can be tested before making a choice. Comparing linear use to circular use is now possible.



# SUSTAINABLE BUSINESS

## Benefit tools

### Design Framework

- Quantify sustainable product design
- Establish product design as the most important precondition to sustainable reuse
- Monitor and develop through time, manage progress
- End user gains insight in design choices and level of reuse possibilities

### C-LCA Tool

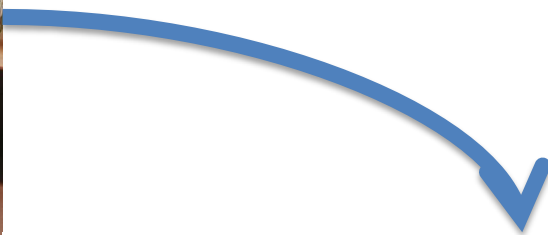
- Calculate and measure impact of linear and circular use of product
- Calculate and compare choices of material and reuse
- Validate reduction of environmental impact for end user
- Stimulate, validate and research reuse scenario's





# Results in daily practice

New CE product design at Gispén in 2014/2015



## Next DOC.

**Remanufactured**

80% materiaal hergebruikt



45% (staal) hergebruikt in Next Doc wo. 35% (blad) in andere toepassing, 10% (staal) gerecycled, 10% energie teruggewonnen



# Dissemination & Demonstration activities in 2014/2015/2016

## Dissemination

- Facility Management Fair & workshops on CE



- Workshops for stakeholders: customers and supply chain
- Several publications and interviews in Dutch media
- Parliament magazine, January 2016.
- Website , newsletter



## FUTURE DIRECTIONS

### Continuous improvement

Tools are considered to be living, hence continuous improvements are embedded with practice and experience.

Combine tools as a part of end user information packet, most end user questions should additionally have a sustainable advise based on qualitative data.

Improve the knowledge and industry acceptance of the tools.

