HOW INTRALOGISTIC SYSTEMS RESPECT AND PROTECT THE WORLD WE ARE LIVING IN

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The Challenges

- Reduce Energy consumption
- Reduce CO2 emissions
- Recycle to avoid future shortage of basic materials
- Avoid use of hazardous materials

THE INITIATIVES

- Sustainability by Savoye
- Greenlog by SWISSLOG
- Cradle to Cradle by Vanderlande Industries
- Environmental impact by VDMA

- **Sustainable Development is not only about green**

- **Green is one part of it, and Intralogistic Systems certainly have to address it (energy efficiency for example)**

- **But Intralogistic Systems can also help to address other aspects of Sustainable Development :**

Consumption impacts
Energy, water, materials

Compact Distribution Center means less energy to operate, less concrete to build, smaller footprint for the neighbourhood, …

Safety and wellbeing impacts

Well-designed workstations improve safety and wellbeing of people who operate in the Distribution Center, as well as quality of delivery leading to cost reduction

swisslog

SWISSLOG‘S ENERGY LABEL - GREENLOG

- Swisslog’s energy label, GreenLog, classifies its material handling equipment according to energy efficiency saving measures.
- Criteria's’ of optimization of energy and therefore cost savings
  > Energy efficient drives
  > Weight reduction of moving parts
  > Avoidance of simultaneous peaks
  > Recuperation and
  > Speed reduction measures
  > Integral system energy management
- Calculation and simulation during design and engineering
- Overall power monitoring, visualizations, statistics in operation

EXAMPLE OF MEASURE IMPACT

Energy consumption of Tornado miniload crane

- Energy consumption data
  - Measured in July 2010 by Swisslog
  - Comparison: without and with common direct current link
- High efficient synchro servo drives
  (efficiency increase of approx 20 %)
- Power management between the horizontal & vertical axis
  (recuperation, after)

		Before	After	Saving
Avg active power	[W]	5'647	5'141	- 9.0 %
Avg active energy per hour	[kWh]	5.65	5.13	- 9.1 %

- Benefits
  - Lower energy consumption → lower investment costs for installed power and lower operational costs

swisslog

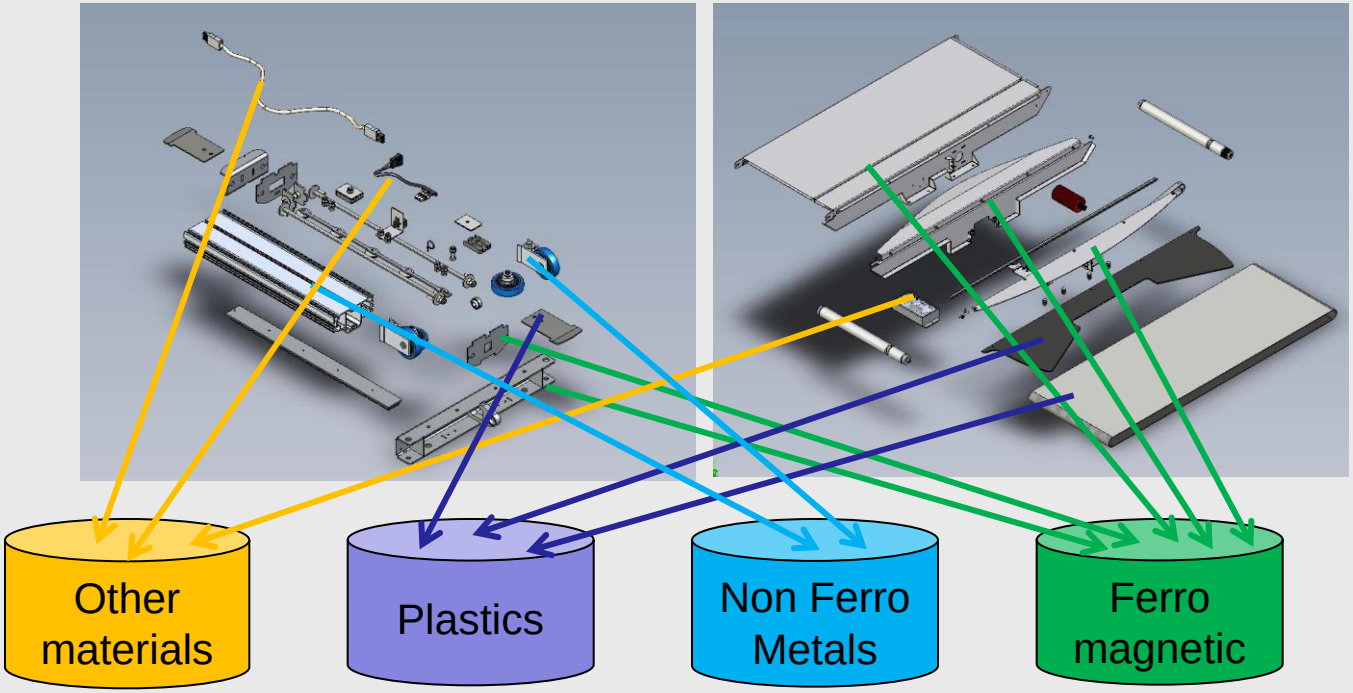
With Cradle to cradle

Eco-effectIVe

Eco effective

Sustainable design

- 90% of all used materials are environment-friendly
- 99% of all used materials are easy to dismantle and to recycle



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VI & Partners are creating real life-cycles

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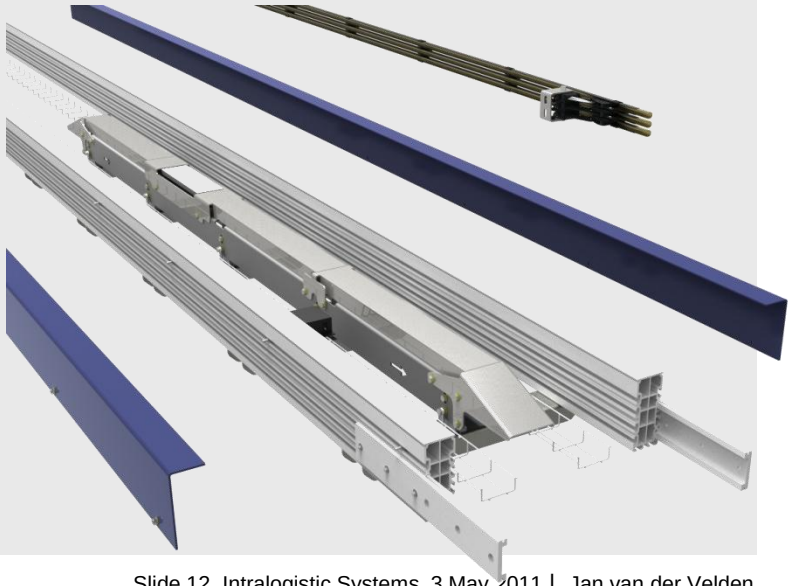
Energy efficient

- Synchronous linear drive
- Conductor rail
- Low friction design

80% more energy-efficient than conventional crossbelt sorters

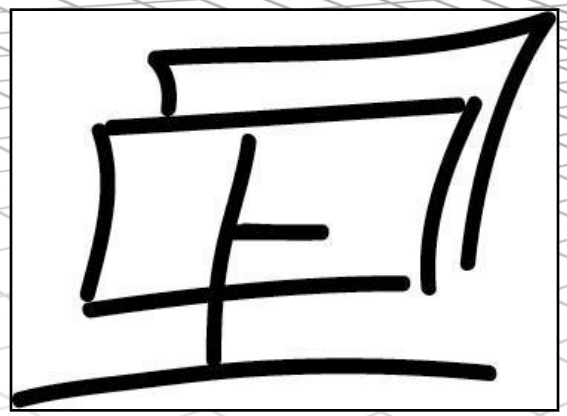


Karlsruhe Institute of Technology

Environmental impact by the use of material handling equipment in warehouses

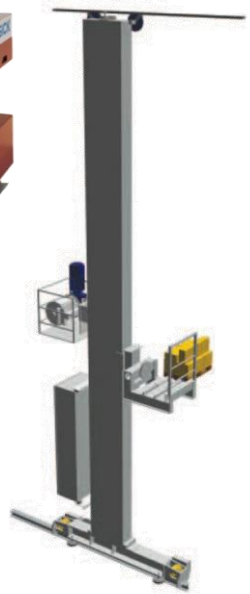
Research project initiated by VDMA

Institute for Material Handling and Logistics (IFL)



Research project: Analysis and quantification of the environmental impact of intralogistic systems

- Research project initiated by the VDMA, attended by the manufacturers
- Research objective
  - Development of methods for the quantification of the environmental impact of material handling equipment (measurement and calculation)
  - Methods for evaluating the relation of the environmental impact between intralogistic systems, industrial trucks and cranes & lifting and in relation to other product groups (trucks, ships, aircraft, construction machines, agricultural machines,...)
  - Methods can be used as a tool for development, production and sales of material handling equipment
- Involved product groups:
  - Intralogistic systems
    - Storage and retrieval systems, satellite systems, shuttles,…
    - Scalable, modular Intralogistic systems
      (e.G. KARIS, Kiva, Multishuttle Move, …)
  - industrial trucks
    - With lifting functionality
    - Fork lifts
  - Cranes and lifting
    - Industrial crane
    - Building crane



Approach

System bound.

- Definition of system boundaries
- module or system, impact location, on human/nature

Env. Impact

- Identification of environmental impacts
- emissions (CO_2, SO_2, NO_x, NH_3, CO, soot, abrasion, noise, hydraulic fluid, ..), resource consumption, energy consumption,…

Quantifi-cation

- Development of methods for the quantification of the environmental impact
- Identification of the most relevant parameters for the environmental impact and energy efficiency of warehouses and intralogistics

Evalu-ation

- Definition of reference parameters and key figures (considering performance, area, capacity, mass, load, flexibility,..) in relation to the logistic effort
- Evaluation of technical solutions –energy consumption/energy efficiency → CO_2-emissions
- Classification of environmental impact of different product groups- new product groups?

Summary

- Several new generation products are designed in an eco effective way
- Energy Consumption reductions
  - Sorters saving 80%
  - Green and Blueveyor reducing up to 60% power consumption
  - Shuttle systems are replacing more and more miniloads reducing power consumption up to 80%
- Ergonomics have become an integral part of the design ensuring the human well-being
- Methods and tools are being developed to choose the most eco-effective Intralogistic System

The green eco effective Intralogistic products have arrived.

Convince yourself at many of the stands here at CEMAT 2011

Intralogistic suppliers do care about the world we are living in!