INTERNATIONAL WORKSHOP ON QUALITY OF LCI DATA

DATA COLLECTION AND QUALITY FOR CP IMPLEMENTATION: THE EXPERIENCE OF THE CENTRE IN UGANDA

Karlsruhe, 20 – 21 October 2003

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CONTENT

- UNIDO CP Programme and Uganda Centre
- Ecobenefits Programme in Uganda
- In-plant assessments and data collection
- Implementation of programme in Uganda
- Beyond the in-plant assessment: Eco-design of packagings
- Development of purposes in data collection

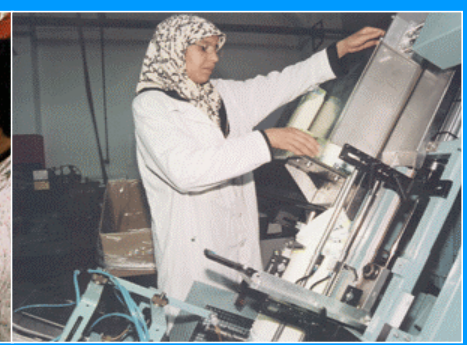
UNIDO CP PROGRAMME

C P C E N T R E S

CLEANER PRODUCTION PROGRAMME
CP ACTIVITIES

5 MAIN SERVICES

- Awareness raising and information
- CP Training programmes
- Technical assistance and in-plant assessments
- EST Development and Transfer
- Policy advice



NCPC IN UGANDA

UGANDA CONTEXT

- Cleaner production: a new concept in Uganda
  More focused on end – of – pipe technologies
- Establishment of a National Environmental authority, responsible for monitoring the implementation of regulations
- Centre **established in October 2001** and hosted at the Industrial Research Institute
  Joint project of government of Uganda and UNIDO
  Objective of introducing CP practices in Uganda

ECO-BENEFITS PROGRAMME

DESCRIPTION

- 10 months programme with the objective of providing company staff with know-how and on the job training on CP
- Public presentation of the results: companies completing the entire programme receive a CP award and brochure published
- First session of the programme concluded in March 2003

  Companies involved from the **food** (sweet, sugar and fisheries) **and packaging sectors**

ECO-BENEFITS PROGRAMME

PROGRAMME PHASES

- **PHASE A:** Guided CP assessment phase, based on 9 workshops (duration 2 – 3 months)
- **PHASE B:** Implementation phase, covering the areas of efficient material use, energy efficiency, improved health and safety, legal compliance (duration 4 - 5 months)
- **PHASE C:** Evaluation phase – team of experts verifies the results achieved by the company, according to a certification and licensing scheme (duration 1 – 1.5 months)
- **PHASE D:** Eco-Benefits certificate and promotion of the successful companies in the Programme

Success of the programme is entirely depending on the immediate implementation of the theory of the workshops

IN-PLANT ASSESSMENT AND DATA COLLECTION

OBJECTIVES

- Identification, characterization and quantification of waste streams and thus environmental and economic assessment of loss of resources (material and energy)
- Identification of easy to implement and low-cost CP options that enterprises can immediately adopt
- Collection of information for investment proposals for financing institutions to undertake medium to high cost CP measures that may require technology and equipment change
- In-plant assessment steps:
  - a) Planning and organization;
  - b) Pre-assessment;
  - c) Assessment;
  - d) Feasibility analysis;
  - e) Implementation;
  - f) Monitoring.

PRE – ASSESSMENT AND DATA COLLECTION

TASKS OF STEP 2

- Compiling and preparing the basic information, through the preparation of a **Process Flow Diagram** (PFD) – including conditions of maintenance and seasonal products and production related changes
- Conducting a **walkthrough** for updated and reliable information, including all support utilities
- Preparing an **eco-map**, including the following themes: water consumption and wastewater discharge, energy use, solid waste generation, odors, noise and dust, safety and environmental risk
- Carrying out and developing **preliminary material and energy balances**

PRE – ASSESSMENT AND DATA COLLECTION

DATA AVAILABILITY

- Water and energy consumption: paid bills
- Average production: production figures and orders received
- Waste and emissions: data available only if collected for economic purpose and if requested by environmental monitoring bodies
- When data not available: “typical” values from literature, to be adapted to the country context

ASSESSMENT PHASE AND FIRST DATA VERIFICATION

DATA AVAILABILITY

Economic evaluation of streams:

1. cost of raw materials / intermediate and final products lost in the waste streams (e.g. costs of unexhausted dye in waste dye liquor)
2. cost of energy in waste streams, in terms of the energy consumed to heat or chill them;
3. cost of treatment / handling / disposal of waste streams, including tipping or discharge fees;
4. costs for workers protection and safe working conditions maintenance (e.g. shop floor exhaust systems);
5. potential liability costs from accidental spills, discharges or leakages.

IMPLEMENTATION OF THE PROCESS IN UGANDA

DATA AVAILABILITY

- Company: **MAKKS Packaging Industries Ltd.**
- Production of corrugated cardboard boxes, with a process entirely conducted in-house, including design and artwork creation
- In-plant assessment brought to the identification of the areas with higher CP potentials: **waste reduction and energy / material losses control**

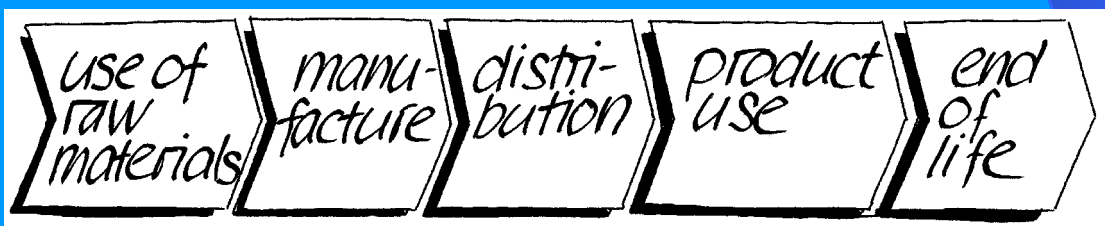
BEYOND IN-PLANT ASSESSMENT: ECODESIGN

ECODESIGN

- Implementation of CP measures, including good housekeeping measures to reduce water consumption, repair leaks and spillages, reduce furnace oil consumption, maintain the equipments responsible for energy consumption, improve the efficiency in the use of paper and, therefore, reduce the generation of solid wastes.

- Use of data collected during in-plant assessment for environmental optimization of the process

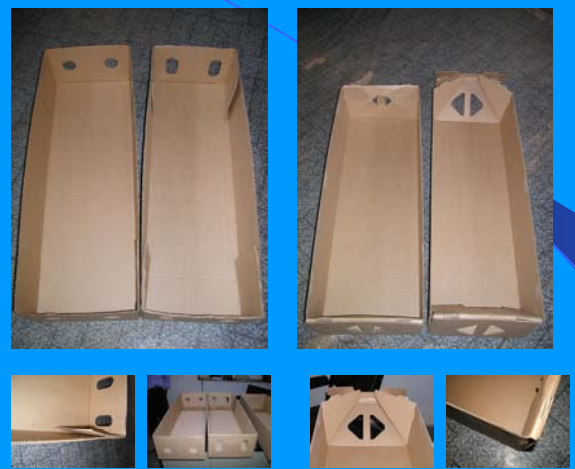
- Impact of product evaluated on the 5 steps of the product life



PRODUCTS DEVELOPMENT WITH ECODESIGN

ECODESIGN RESULTS

Traditional box for flower export



EcoDesign box for flower export

Advantages of the EcoDesign box for flower export

Resource efficiency: reduction of 167 grams in weight (-12%)

Improved production process: The production of the box requires one less production step since the bottom is 3 ply instead of 5. The box is self-locking and does not require tape or staples.

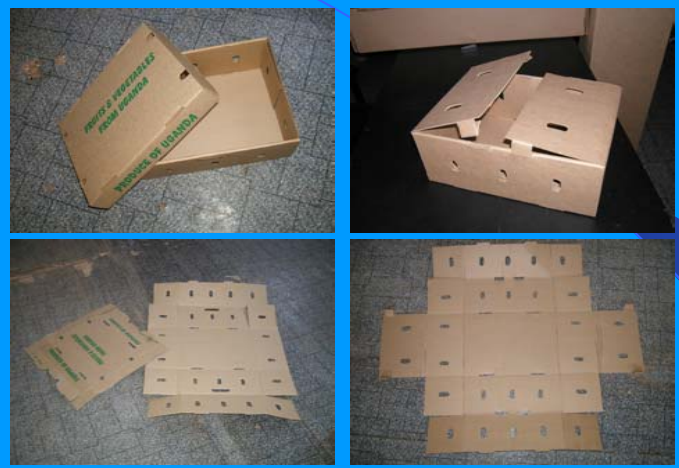
Cost reduction: The box is sold at lower price, because of the decrease of air charges.

Functionality and costumer satisfaction: This design offers better ventilation for the flowers, granting more protection to flowers and increasing their value.

PRODUCTS DEVELOPMENT WITH ECODESIGN

ECODESIGN RESULTS

Traditional box for fruit export, 5 kg



EcoDesign box for fruit export

Advantages of the EcoDesign box for fruit export

Resource efficiency: reduction of 60 grams reduction in weight (- 10,7%)

Improved production process: The number of steps of the production process of the boxes is reduced by one unit since the MAKSS EcoDesign box is a one-piece box. Off-cuts are utilized to make pads for other boxes.

Cost reduction: The box is sold at a lower price thanks to the reduction of air charges.

Functionality and costumer satisfaction: Stability and ventilation are excellent. Easy locking system saves time. The one-piece box is easier to handle, less space is needed for packing. No problems of imbalance in stocks arise.

FURTHER DEVELOPMENTS

TASKS OF STEP 2

- Preparation of **database** and creation of **networks** to share the methodology adopted for collection and validation of environmental data

- Availability of data at **macro level** in order to evaluate the influence of the activity of the Centres and Programmes on the implementation of the UN Millennium Development Goals and the Johannesburg Declaration

- Information collection and evaluation process to be adopted for the implementation of CP in a **life cycle approach,** to improve competitiveness of the companies and to increase their potential for market access.

Thank you

for your attention