umberto®
know the flow.

SUCCESSFUL PROJECTS IN EMERGING AND DEVELOPING ECONOMIES WITH UMBERTO

THE TASK

Economic growth of developing and emerging countries in our globalized system requires technological innovation. Companies from these countries that wish to sell their products to developed markets have to comply to existing social, legal, and environmental requirements.

A selection of successful practical applications of Umberto in projects in developing and emerging countries follows:

MATERIAL AND ENERGY ACCOUNTING AT A TOWEL PRODUCTION PLANT IN INDONESIA

The privately owned textile manufacturer Indah Jaya was established in 1962 in Tangerang, near Jakarta. Its core business is the production of towels for export to Europe, Japan and the USA.
Funded by four partners, a research project was established in the context of environmental management accounting (EMA) for small and medium-sized enterprises in South-East Asia.
Inwent, a non-profit organization from Germany with worldwide operations and CSM (Centre for Sustainability Management), an internationally active competence centre for corporate sustainability management sent their staff in Indonesia. The project's objective was to qualify local consultants in EMA using practical experience in an expanding textile manufacturing company.

The researchers used Umberto for material flow analyses to optimize processes wherever possible and to enhance the international competitiveness of Indah Jaya.

Results:

- The recycling of wastewater led to 20 % lower fresh water consumption and a 2 % net reduction of water costs after all necessary investments.
- The use of high quality coal instead of lower quality coal led to a 25 % net reduction of steam production costs.
- The production of dark coloured towels during the dyeing process chain is 20 % more expensive than the production of light coloured towels. This insight led to a revised price policy.

Drivers of environmental impacts could be identified with the Umberto models, e.g. sources of wastewater and solid waste or of energy consumption. Today, sustainability and environmental management accounting is part of daily business at Indah Jaya.

Towel Cutting at Indah Jaya

National and international organizations and networks are working together to enable managers in target countries to put reduction of resource consumption, energy efficiency, life cycle thinking and sustainability management into practice.
To this end, transfer of knowledge is of strategic importance for achieving a changeover to a more sustainable way of producing.
Umberto is being used in many industrialized countries as a software tool by companies that strive to optimize their production system and improve their competitiveness.
Development organizations acting in the business, technical, and environmental fields use Umberto in their projects.

IFU HAMBURG GMBH

As a renown maker of software tools for material and energy flow analysis, ifu Hamburg fosters global dissemination of sustainable thinking and supports practitioners and researcher in developing countries.

TESTIMONIAL

"ifu Hamburg is a key collaborator of the UNEP/SETAC Life Cycle Award activity of the UNEP/SETAC Life Cycle Initiative. It provides softwares for Material Flow Modeling and Life Cycle Assessment so as to bring sustainability step by step into practice. The free licenses provided for research and educational institutions in developing countries for projects awarded by the Life Cycle Initiative are a very valuable contribution for spreading these concepts in the whole world."

The Secretariat of the UNEP/SETAC Life Cycle Initiative, Paris, France
http://lcinitiative.unep.fr

Life Cycle Initiative

DISCLOSING INEFFICIENCIES IN A VIETNAMESE BREWERY

The medium-sized beer brewery of Tuy Hoa province, central Vietnam, is a joint venture of private and state-run investors. The brewery's products are sold throughout Vietnam, where beer is very popular. As part of an InWEnt-funded capacity development project, researchers of the Centre for Sustainability Management and the engineers of the brewery used Umberto to visualize and simulate the flows of raw materials, water, energy and further utilities. The analysis revealed that the bottle washing process consumes substantially more energy and fresh water than expected. Hence, recycling the comparably clean and warm washing water from the last washing step for the prewashing step turned out to be a win-win situation:
Cost savings due to lower consumption of energy and water. Furthermore, the Umberto analysis indicated that the energy-efficiency of the brewery's cooling and chilling activities could be improved further by better insulation of tanks and pipes.

ENVIRONMENTAL PERFORMANCE EVALUATION OF GREEN COFFEE PROCESSING PLANTS IN COSTA RICA

The international coffee market is presently subject to difficult conditions due to overproduction and structural change. At the same time, there is a vast number of potentially interested parties focusing on the social, economic and ecological aspects of corporate coffee production.
The Centro Agronómico Tropical de Investigación y Enseñanza (CATIE, Costa Rica) provided guidance for an initiative realised within a diploma thesis. Two local coffee plantations faced with the necessity of economically optimising the fulfilment of their customers' requirements were the pilot companies.
Critical factors for the production process, e.g. the availability of water or the handling of hazardous waste, were modelled with Umberto. The results produced with Umberto proved to be a guidepost leading the way to optimized processes and continued profits.

Selected results of this project:
- Wastewater is being treated and reused.
- Hazardous waste is recovered and segregated. The health and safety of workers and suppliers is improved.
- Management options for the use of renewable energy have been assessed and the implementation of a fossil energy replacement program is started.

Washing of green coffeee beans

DECENTRALIZED COMPOSTING IN TUNISIA

Bou Argoub is a town in Tunisia with 15,000 inhabitants. Waste disposal and the question of possible optimization through waste separation is an important issue for community managers.

European subsidies were given to EAWAG, a Swiss-based research institute which provided staff to work with clerks of the Tunisian public waste disposal system. They used Umberto to model various scenarios of centralized and decentralized composting. The model covered the transformation of waste, compost, as well as emissions and residues. Costs in this case were differentiated between material costs, variable costs and overhead costs.

Results of this project:
- The potential for mass reduction of waste volume by composting was made obvious.
- Transportation activities could be reduced by about 48 % due to optimized collection routes and storage places. The local sanitary situation has been improved considerably through more effective waste collection.

Umberto with its visual model structure and clear results presentation could demonstrate potential cost savings that are directly dependent on the collection and transport system. The complex topic composting needs ongoing consulting know-how.

Umberto® is developed in cooperation with ifeu (Institute for Energy and Environmental Research Heidelberg)