

LCA for Optimization of Electroplating SME's

Robert Ackermann

Robert.ackermann@itc-zts.fzk.de

Forschungszentrum Karlsruhe GmbH, Germany

Processes and plants may be improved in terms of economic, technical and/or ecological factors. Usually, technical optimisation is worked out for single processes of a complex process chain, but possibly worsening the performance of the overall system. As a result, both financial and natural resources can be wasted. In order to avoid misjudgements, there is need for an integrated approach to be applied from the beginning of the optimisation process requiring an individual analysis and a tailored proposal for each plant.

The complex instrument Ecological Plant Optimisation (EPO) helps to assess ecological and economic impacts from the start-up to investment and realisation processes. As it is based on the principles of Life Cycle Assessment (LCA) and Cost Accounting it delivers important indicators concerning both ecology and economy. In that way the Ecological Plant Optimisation constitutes a helpful instrument to prepare strategic and integral decisions on a management level. This instrument is used for the decision making process in the galvanising industry in Germany. The main target was to find a optimised solution for the process chain for different electroplating process chains under market conditions. The decision making process with EPO started from the idea of optimisation up to realisation of new production line. The decision making process was a joint activity of the manufacturer, technical, economical and ecological consultants, plant engineering enterprises and recycling enterprises.

Currently in 18 case studies of different small or medium size enterprises have been accomplished. Overall more than 900 detailed models of electroplating processes and more than 250 life cycle models for the special life cycle segment of surfacing technology have been calculated. The methodology and the database is partially published by the German society for surface technology "Zentralverband Oberflächentechnik" (ZVO; www.dgo-online.de).