Technical article "Environment"

Raimund Faber, SMT – General Manager Sales & Marketing

Environmentally friendly soldering process

Reduced consumption and emissions conserve resources and cost centres

Today, environmental awareness is not only absolutely essential in procurements, but is frequently also associated with low consumption costs when operating the relevant device. In industry, this is also generally the case, but one or another environmental aspect is cheerfully ignored in investments whenever overheads are allocated to a different budget. Energy costs or emission protection, for example, are items which are supported in some business management systems by separate cost centres and therefore are not loaded on to the machine operator's profit centre. However, only someone who endeavours to bring ecological and economic aspects sensibly into harmony and also to integrate these into his system concept will be accepted in future by industry as a serious partner.

In reflow soldering systems, SMT in Wertheim has assumed a pathfinder role in resource protection and accordingly cost reduction also. The environmental philosophy stated in the company's own articles of association is based on three tenets.
These shape the search for the lowest possible energy consumption, nitrogen use and maintenance expenditure. The results achieved make a clear statement.

Power nozzle for optimum energy use

In the recently completed revision of the product range, the energy saving line imposed has consequently been continued and energy consumption has been reduced drastically with swingeing changes. Simultaneously, the actions taken again made it possible to improve the quality of the soldering results.

SMT
Maschinen- und Vertriebs Gmbh & Co.KG
Roter Sand 5 • D-97877 Wertheim • Tel: +49/93 42/970-0 • Fax: .../9 70-8 00 • SMT@SMT-Wertheim.de • www.SMT-Wertheim.de

The most important factor for functional energy management is heat transfer. SMT has set up a perfect gas feed system using power nozzle technology. The high fan output provides absolute temperature stability in the soldering chamber at a flow speed which is concurrently lower. A further energy saving is achieved by zone separation. Matched to the relevant component assembly and the requirement specified for this, the process temperature is controlled to a high degree of accuracy in precisely the zone where it is needed for an ideal soldering result. Unnecessary heating of the surrounding zones is avoided.

SMT Quattro Peak XL Plus

Goodbye, energy consuming condenser

SMT is also exploring new paths in process gas cleaning. The search for energy efficiency was consequently implemented. Instead of the usual condensation with all its cooling systems and thus energy consumers, the gas is fed through a granulate and thus cleaned. By removing the condensers, the gas can be recirculated along the shortest path. Short piping runs mean low heat losses and thus a lower energy requirement to reach the ideal process temperature. Into the bargain, the state of the art equipped systems need less space and have achieved visual appeal.

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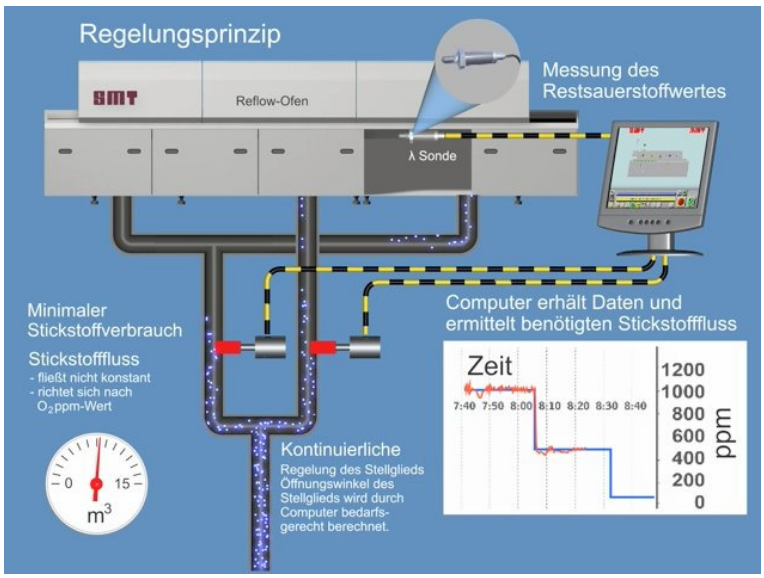
Intelligent nitrogen management

To reduce the operating materials, additives and lubricants needed is the goal of every machine constructor. If the proportion of additives used is reduced, not only overheads go down. Resources will be protected, emissions will be cut, residues will be lower and frequently maintenance expenditure will be less.

At SMT, nitrogen, which is an important gas in the soldering process, is to the forefront. The people from Wertheim succeeded in lowering the consumption significantly by means of intelligent nitrogen management. The saving effect is achieved by automatic matching of the pass-through apertures and the nitrogen feed with different PCBs and a flow tunnel at the inlet and outlet with variable opening height.



Maintenance and the environment

A decisive contribution to environmental and resource protection can be made, particularly when maintaining reflow soldering systems. What is simpler to avoid than the dangers which arise during manufacture, transport, storage, use and disposal of the required additives?

Direct soldering processes are always associated with gas emissions from PCBs, paints and flux residues. Absorption systems working at their best consequently play a decisive part in the quality of the soldering process, the cleaning costs and the down times, and thus the economics of the entire system. SMT has fitted all systems with a new absorption system (ABS) and thus revolutionised process gas cleaning in soldering technology. Process gases are not cleaned conventionally by condensation, but bound into a granulate. This has significant advantages and conceals numerous

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opportunities for savings. Viscous slag, which is deposited on the condensers and inside the machine and which must be removed in a labour-intensive process, is eliminated. The granulate also allows a significantly longer working life and has to be renewed only every 3000 hours or thereabouts. Used granulate can be disposed of via solid waste recovery. Maintenance expenditure falls significantly and machine down times are significantly reduced. The absence of condensers also eliminates costly water supplies and energy consumption is also reduced.

A successful concept

In summary, it can be said that machine constructors are today assuming more responsibility than ever before. More responsibility for customers and more responsibility for the environment. Engineering services are no longer limited purely to performance enhancement and cost minimising. Integrated concepts are demanded, with which every customer will be provided, resources and the environment protected and overheads simultaneously kept under control, because energy and additives are often assumed by "other" cost centres, but in the bottom line always remain in the company and surplus emissions will have an impact on all of us. Environmental aspects in system procurement will become increasingly important in the future, in which they frequently accompany reduced costs for energy, operating resources and disposal. Industry can, will and must make its contribution to the use of environmentally friendly and resource-protecting technology by the careful selection of suitable suppliers, above all in order that they become accepted as a serious partner.

For further information:

SMT Maschinen- und Vertriebs
GmbH & Co. KG
Roter Sand 5
97877 Wertheim
Tel: 09342-970-0
e-Mail: info@smt-wertheim.de
www.smt-wertheim.de