AIII solvents to clean electronic components
A case study at Elcoteq

Elcoteq is a Finnish company producing electronic components. Cleaning is of paramount importance in the production of high precision devices.

The complexity and growing sensitiveness of radio-wave guiding components as well as the reduction of production time request an improvement of cleaning techniques. It is the reason for which Elcoteq has acquired an Amsonic EVD 80 in may 2004 for its Offenburg (D) facility.
The cleaning was done till then in a multitank water cleaning line
The new installation cleans radio-guiding components.
The cleaning process must ensure that welding fluxes can be eliminated.

The analysis of the development department at Marconi has shown that residues of fluxes remaining on critical components will cristallize at low temperature and can lead to compression constraints in ceramic condensators. These low mechanical constraints induce parasite voltages at the "bornes" of components. Disfunctions will result in the form of byte errors.
Precision cleaning is necessary to avoid this type of problems.
Continuous analysis have proven that cleaning plays a predominant role.

The decision to purchase the Amsonic machine has been motivated by technical, economical, safety regulation and by the need to adapt the cleaning process to new components which are sensitive to oscillatory phenomena.

The choice was made to install the model EVD 80. Cleaning is achieved in a compact vacuum chamber. The solvent is an AIII, modified alcohol – alkoxy-propanol Zestron VD-. This solvent includes no chlorine, bromine of fluorine. It is particularly ecological. It is not toxic and must not comply with toxic products legislation (transport, etc.). The flame-point is 62°C.

EVD 80 by Amsonic is PC controlled. It is compact and the distillator is integrated in the machine, which guarantees a constant solvent quality.
Cleaning with AIII solvents has shown a significant increase over the last years The reason of this success lays in their efficiency in comparison with water based systems and their lack of toxicity towards humans and environment when compared with chlorinated solvents per and tri.
The process economy is guaranteed by the continuous distillation, ensuring a low solvent usage. The comparison of energy consumption shows also the benefits of using AIII solvents.

Energy consumption to evaporate 160 liters in MJ
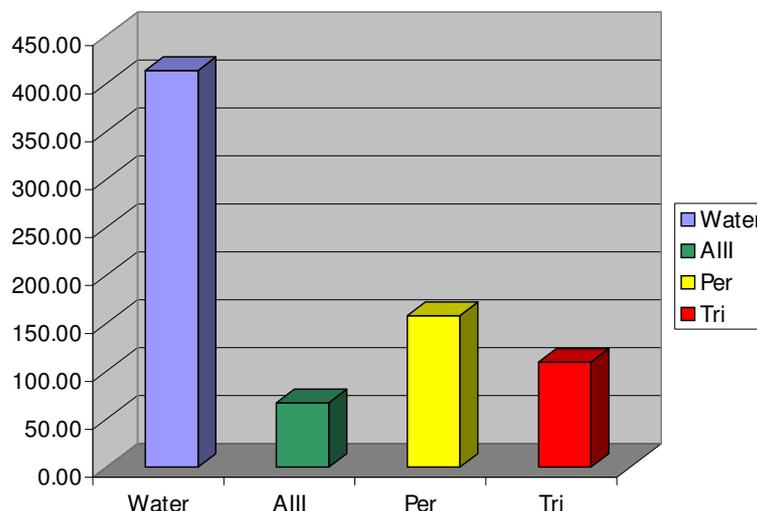
Water based cleaning remains however a prerequisite in all cases where high precision cleaning is needed and when no organic pollution is tolerated as well as in medical applications and optical products.

EVD 80 machine

The cleaning process is programmable depending on the cleaning quality requirements
The following programmes are available:

- Immersion in warm solvent with programmable ultrasonics power or spray cleaning,
- Solvent vapour rinsing under vacuum,
- Drying under vacuum.

Baskets can be cleaned using the static mode or with oscillation or rotation.

The production rate is 3 to 5 baskets per hour. The basket size is 450x300x200mm. Various inserts are used for the different components.
The installation is very compact. The dimensions are (LxWxH) 1810x1670x1820 mm or a surface of 3 m^2.

The built-in distillator ensures a constant quality of solvent. Cleaning occurs therefore with perfectly cleaned solvent. By comparison with chlorinated solvents, the AIII cannot become acidic, a further advantage. The consumption of solvent is limited to compensate the loss of solvent by distillation. The costs are therefore very low.
The actual consumption is below 100 liters in 10 months.
The experiences with the EVD 80 machine are good as Mr. Heribert Orlik confirms
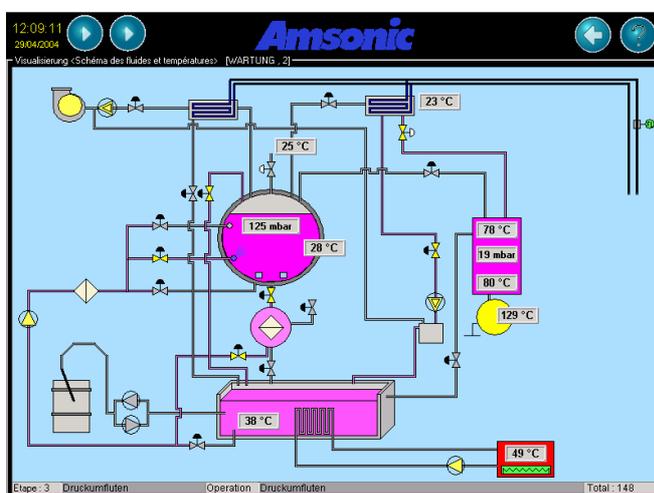All pollutions from fluxes are eliminated. The achieved cleanliness controls on components show that flux residues are fully eliminated. They show definitely better results. The controls use ionographic processes and show results well below –better- than the requested values.
The cleaning process fullfils its target.
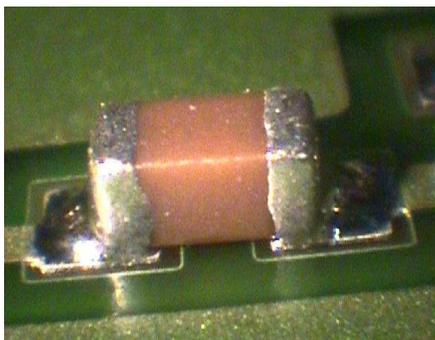
Clean component

The documentation of the cleaning parameters, processed components and error messages is integrated. The status of the machine is visible in real time thanks to the synoptic diagramm.

Synoptique diagramm