

Extraction and filtration technology for electronics production

Air pollution control in the manufacture of electronic assemblies and systems

Clean air – an important factor in electronics production

Clean air is crucial in electronics manufacturing. The production of electronic components, assemblies or systems is accompanied by a variety of different processes. These generate airborne pollutants that can endanger the health of employees, contaminate manufacturing equipment and affect the quality of products.

Therefore, compliance with strict air quality standards is an important factor for the sustainability of the electronics industry.

SOLDERING FUME AS AN EXAMPLE OF THE TRIPLE DAMAGING EFFECT OF AIRBORNE POLLUTANTS IN ELECTRONICS PRODUCTION



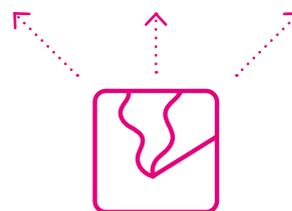
HUMAN



MACHINE



PRODUCT



POLLUTANT SOLDERING FUMES

Gluing

Labelling

Cable assembly

Trimming

Cleaning

Potting

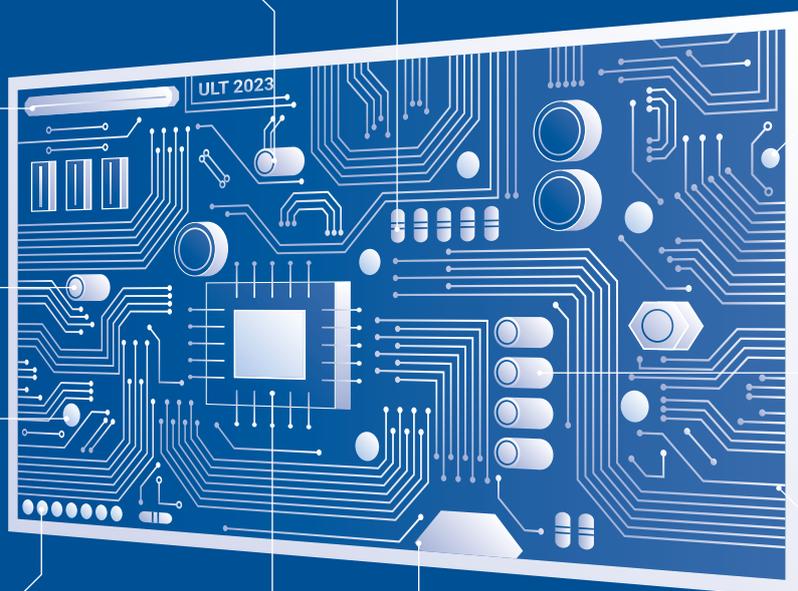
Painting

Soldering

Depanelling

Edge insulation

Drilling



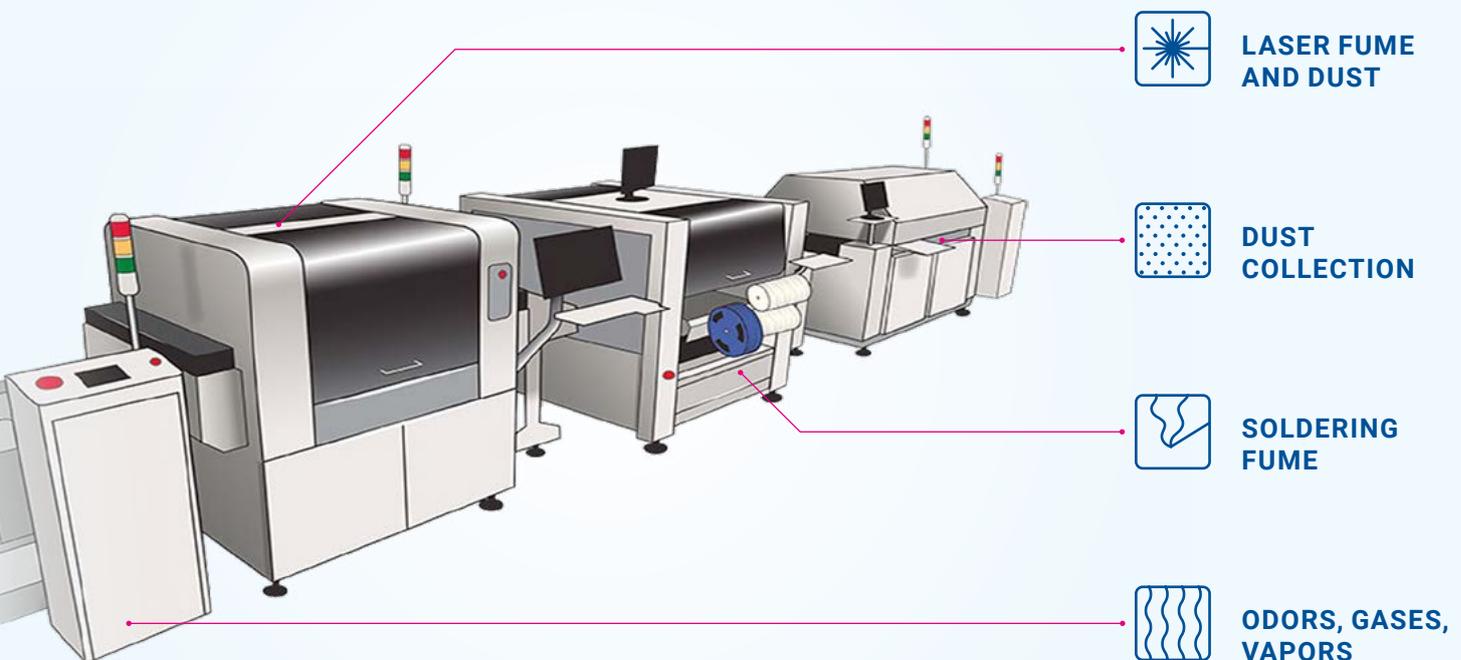
Electronics production – characterized by complex processes

The manufacture of printed circuit boards (PCBs) is a series of complex process steps that involve a variety of materials and processes. These processes produce airborne pollutants that endanger the health of workers and the environment.

AIRBORNE POLLUTANTS IN PCB PRODUCTION INCLUDE:

- Heavy metals such as lead, cadmium, mercury, and arsenic can be released from circuit boards, solders, and other materials. These metals are toxic and can cause respiratory disease, kidney damage and other health problems.
- Organic compounds such as formaldehyde, toluene and xylene can be released from adhesives, paints, and other chemicals. These compounds can be carcinogenic, mutagenic, and teratogenic.
- Dust particles such as dust, smoke and soot may occur from various sources, e. g., cutting circuit boards, soldering, and cleaning. These particles lead to respiratory irritation or illness.

ULT offers comprehensive solutions for all process steps in electronics production where optimum air quality is crucial.



Airborne pollutants in electronics production

Laser fume

Laser fume is a negative side effect of innovative laser technology. As a by-product of numerous applications in electronics manufacturing, laser smoke and dust must always be viewed critically. It is dangerous because:

- It can contain harmful substances, e. g. dioxins, furans and heavy metals (lead, cadmium and mercury).
- It increases the risk of fires and explosions.
- It impairs the quality of electronic products as it can cause contamination and defects.
- It can contaminate laser systems and thus impact the processing quality.

LASER FUME AND DUST ARE GENERATED DURING THE FOLLOWING PROCESS STEPS:

- Laser marking
- Depanelling
- Laser soldering
- Cable assembly
[Stripping, Labelling]
- Trimming
- Structuring
- Edge insulation

ULT offers a comprehensive range of mobile and stationary extraction systems for the removal of laser fume and dust.



ULT SOLUTIONS FOR LASER FUME EXTRACTION



Soldering fume

So-called soft soldering processes are largely used in the manufacturing process of electronic assemblies. These generate the finest soldering fume (sometimes also referred to as soldering vapors), which must be eliminated because:

- It may contain harmful substances such as lead, tin, rosin, amines, formaldehyde, phenol, hydrogen chloride and carbon monoxide.
- Long-term exposure to soldering fumes can lead to health problems such as cancer, respiratory diseases and neurological disorders.
- It increases the risk of fires and explosions.
- It affects the product quality.

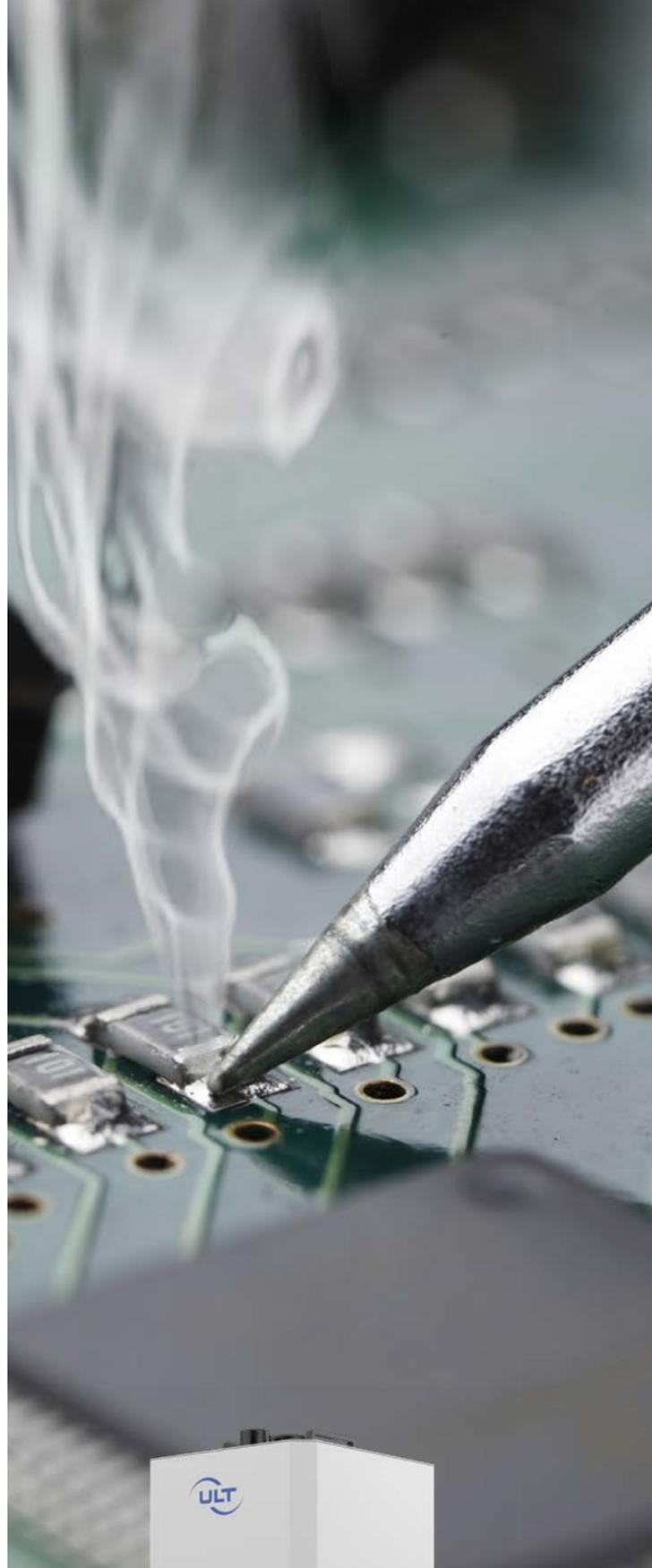
SOLDERING FUMES AND VAPOR ARE PRODUCED DURING THE FOLLOWING PROCESS STEPS:

- Soldering
- Wave soldering
- Reflow soldering
- Vapor phase soldering
- Laser soldering
- Light soldering
- Selective soldering
- Dip soldering
- Manual soldering

ULT develops and manufactures technologically advanced and low-noise extraction systems for removing soldering fumes.



ULT SOLUTIONS FOR SOLDER FUME EXTRACTION



Vapors, odors, gases

Odors, vapors and gases occurring in electronics manufacturing contain:

- Heavy metals such as lead, cadmium, and mercury
- Organic compounds such as dioxins, furans, and formaldehyde
- Gases such as carbon monoxide, hydrogen chloride, and sulphur dioxide.

They can cause health problems such as cancer, respiratory diseases and neurological disorders and have a negative impact on manufacturing and product quality.

ODORS, VAPORS AND GASES ARE PRODUCED DURING THE FOLLOWING PROCESS STEPS:

- Vapor phase soldering
- Labelling by printing
- Painting/
conformal coating
- Potting
- Cable assembly
- [Labelling]
- Trimming
- Structuring
- Flux
- Cleaning with solvents
- Dosing
- Gluing
- Edge insulation

ULT offers users a wide range of adsorption filter-based extraction systems with high availability.



FILTRATION SYSTEMS FOR VAPORS, ODORS, GASES



Dust and smoke

The following dusts and fine dusts can occur in electronics production:

- Metal dusts of copper, tin, lead, aluminum
- Plastic dust from GRP materials, epoxy resins and polyethylene
- Organic dusts such as rosin and glue
- Fine dust such as soot and ash

They are problematic because they:

- May cause health problems such as respiratory diseases, cancer and skin irritation.
- May affect the quality of electronic products.
- May increase the risk of fires and explosions.

DUST AND SMOKE ARISE DURING THE FOLLOWING PROCESS STEPS:

- Mechanic depanelling
- Cable assembly
[Stripping, Labelling]
- Trimming
- Structuring
- Cleaning including fine dust extraction

ULT offers user-friendly extraction and filtration systems for air pollution control in the event of dust and fine dust.



ULT SOLUTIONS FOR DUST CONTROL AND COLLECTION

ULT systems and their typical fields of application

Extraction and filtration solutions for air purification



ODORS, GASES, VAPORS



LASER FUME AND DUST



DUST COLLECTION



SOLDERING FUME

Further ventilation solutions

In addition, ULT offers further comprehensive and technologically proven solutions for processes and ancillary processes in PCB production.



IONIZATION



AIR DRYING



COMPLETE SOLUTIONS



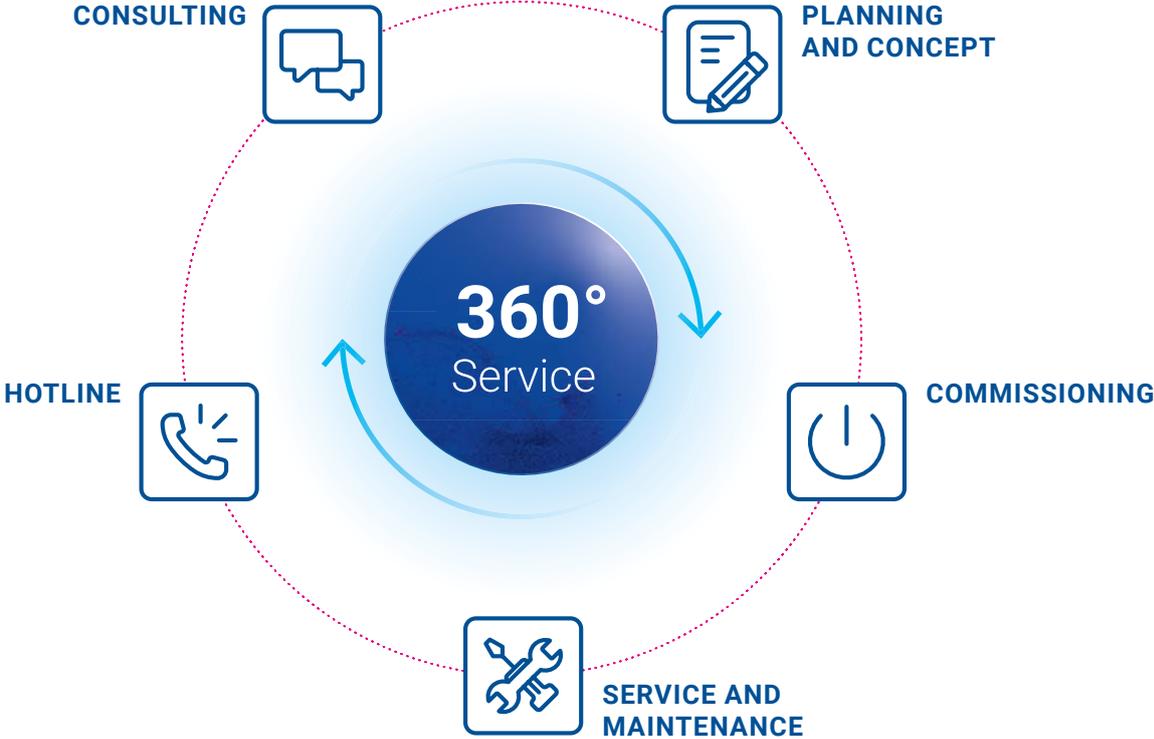
CUSTOMIZED SOLUTIONS



INDUSTRY WEBSITE ELECTRONICS MANUFACTURING

We are your partner!

Our performance promise



Intelligent solutions for best air quality

ULT – air quality

Since the air quality is of fundamental importance for work and production processes, ULT, as a full-service provider, develops air purification solutions for the highest demands—to protect employees, equipment, products, and the environment.

The reliability of our products ensures manufacturing processes and the profitability of our customers.

The proximity of the ULT experts to the processes and requirements of our customers enables the development of tailor-made and needs-oriented solutions—from the standard product to the individual system.

Our own research and development department as well as numerous cooperations with professional associations, education institutions and industry form the basis for the permanent further development of our ventilation systems and solutions for the best air quality of tomorrow.



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