Fraunhofer
IPA

FRAUNHOFER INSTITUTE FOR
MANUFACTURING ENGINEERING AND AUTOMATION IPA

DESIGNING PRODUCTIONS FOR CLEANLINESS

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Introduction

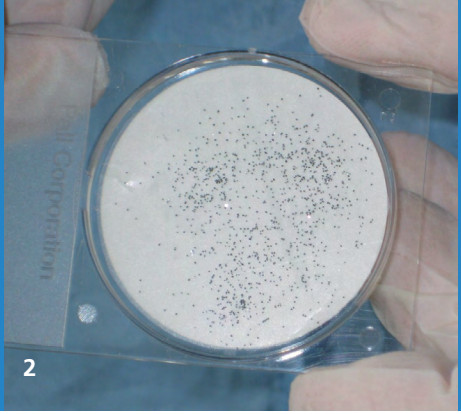
Especially in the automobile and supplier industry, cleanliness requirements have risen enormously. Due to the high number of manufacturing steps and long supplier chains, it is extremely difficult for companies concerned to identify the processes which strongly influence product cleanliness. Considerable investments are often made without really knowing if they will be effective, e. g. procuring new washing machinery or relocating assembly lines in a cleanroom.

Solution

In the manufacture of components and subassemblies, numerous influencing factors could affect product cleanliness, e. g.:

- Manufacturing processes
- Staff
- Washing technology
- Transport, storage, logistics
- Manufacturing environment
- Process media
- Cleanliness-suitable design
- Quality assurance

Taking contamination risks into consideration and their importance from the point of view of the product – from the



prototype stage right up to final assembly – the Fraunhofer IPA draws up cleanliness concepts adapted to the components and industries concerned. The emphasis is on a cost-effective solution which improves product cleanliness and avoids mistaken investments.

Procedure

As a rule, the starting point for an optimization is a cleanliness analysis of the products and components concerned. This is carried out in the cleanliness laboratory at the Fraunhofer IPA.

The assessment of the production line and processes with regard to prevailing contamination risks is made by members of Fraunhofer IPA staff who are well-experienced in the field of clean manufacturing on site. Where required, analyses of particles in the environmental atmosphere, process media and on surfaces are carried out.

The analyses are evaluated and optimization measures derived in close cooperation with manufacturing and quality control experts from the interested companies. To ensure that newly-constructed or optimized products sensitive to contamination are easy to clean, the Fraunhofer IPA also supports design, construction and development processes.

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We help you to develop cost-effective and practicable solutions for cleanliness-sensitive products, irrespective of whether they are manufactured in cleanrooms or not.

1 *Assessing packaging.*
2 *Process analysis.*
3 *Planning logistics.*

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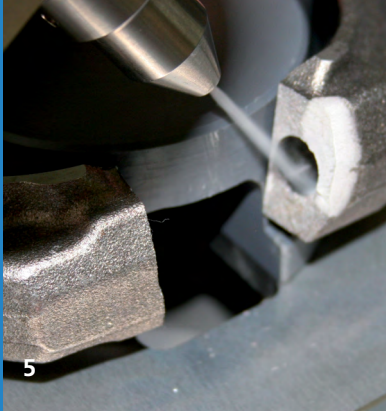

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Our range of services

The Department of Ultraclean Technology and Micromanufacturing is a competent and efficient R&D partner which helps industry to manufacture products sensitive to contamination. Among others, the services available include:

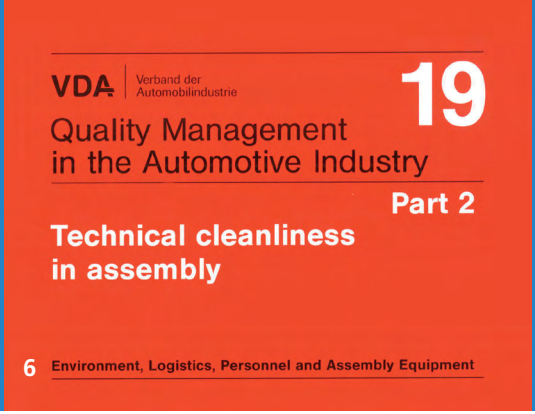
- Analysis of traditional manufacturing environments with regard to functionally-critical contamination
- Identification of cleanliness potentials which can be implemented cost-effectively
- Contamination-optimized work place and line design
- Implementation of a cleanliness system for the logistics chain
- Consulting on cleanliness-suitable product design
- Support in designing, developing and realizing cleanliness test facilities and labs
- Personnel trainings:
  – Cleanroom-suitable behaviour
  – VDA Volume 19.2 »Technical cleanliness in assembly«

TITLE *Critical assembly contamination.*

4 *Cleanroom planning.*

5 *Assembly-integrated cleaning.*

6 *VDA Volume 19.2.*



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For further information about our range of services, solutions and consultancy, please contact our experts.

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