



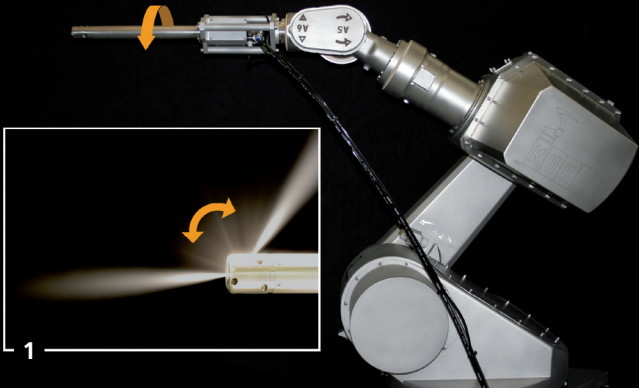
Fraunhofer

IPA

FRAUNHOFER INSTITUTE FOR
MANUFACTURING ENGINEERING AND AUTOMATION IPA

CLEANING SOLUTIONS USING CO₂-SNOW JETS





Introduction

The trend towards higher standards of product cleanliness has remained unbroken for many years. In a number of sectors, cleaning has become a key technology which needs to be mastered in order to achieve high product quality.

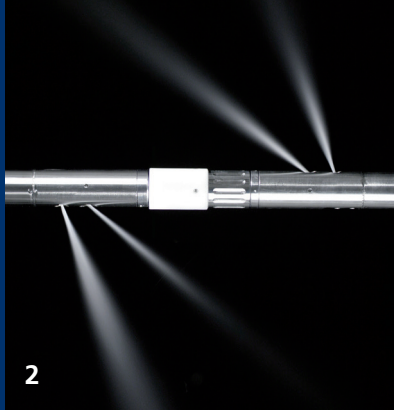
Many established cleaning techniques have reached their limits as far as cleaning accuracy, process stability and manufacturing integration are concerned.

Solution approach

The use of highly-accelerated CO₂ snow is a practicable cleaning alternative for a wide range of applications. This is due to the efficient combination of:

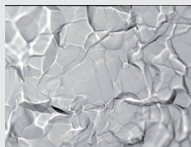
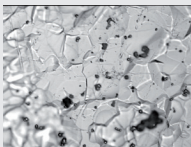
- Its gentle abrasive action
- The induction of thermoexpansion
- Solubility
- The rinsing effect of sublimation

- 1 *CO₂ swivel nozzle for interior component cleaning.*
- 2 *Coupled XXL-lance each with two nozzles.*
- 3 *Wafer cleaning with mini lance.*

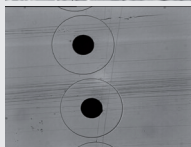
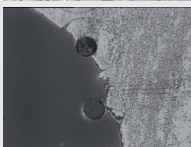


Examples of application

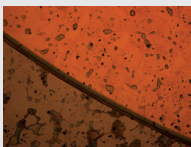
Metal surface/
Particles



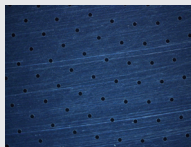
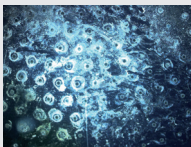
Printer nozzle/
Dried paint



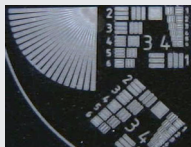
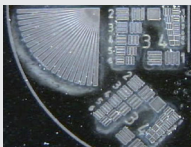
Laser mirror/
Fingerprints



Spin nozzle/
Deposits

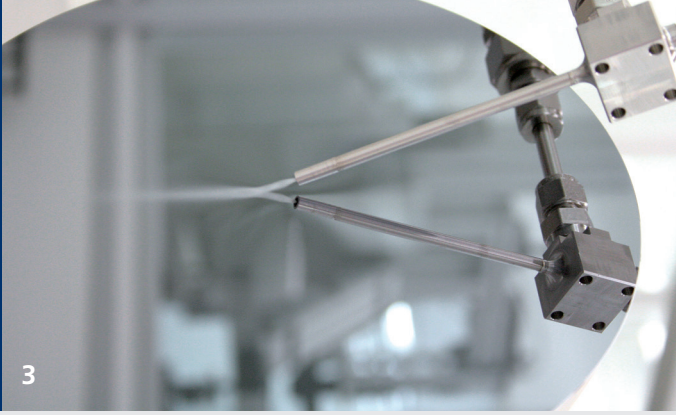


Scales/
Laser deposits

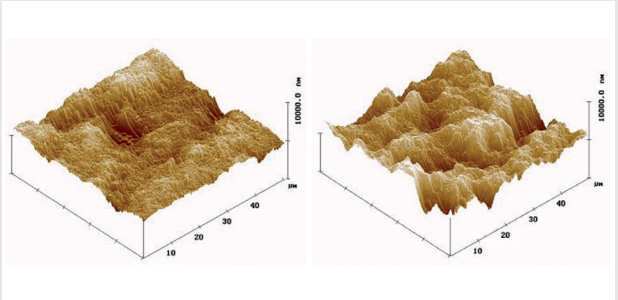


Bond pads/
Solder resists



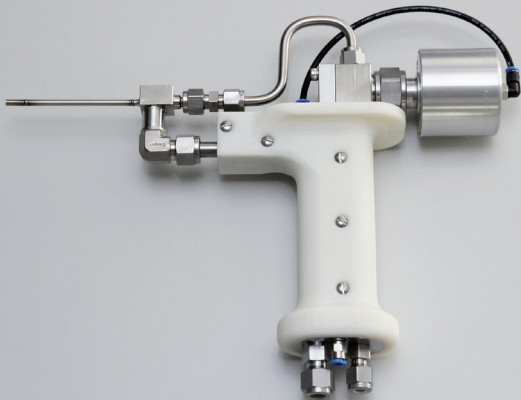


Surface roughening



Restoration





Applications

Through new developments made by the Fraunhofer IPA, the great advantages of the CO₂ snow jet technique can now be used to clean internal geometries:

- Efficient cleaning action
- Localized cleaning
- Gentle, dry workpiece handling
- High degree of automation
- Good levels of system integration
- No requirement for cleaning media preparation

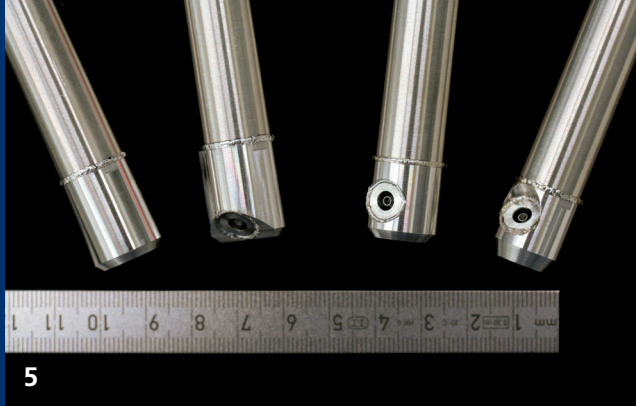
Our range of services

- Realization of individual cleaning tools
- Cleaning as a service
- Feasibility studies

TITLE *CO₂ snow jet cleaning using patented ultrasonic nozzle.*

4 *Handheld cleaning gun.*

5 *Cleaning lance with different jet angles.*



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

Department

Ultraclean Technology and Micromanufacturing

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