



Ultrasonics.Steam.Ultraclean.



Aerospace

## **Ultrasonic cleaning technology for aerospace applications**

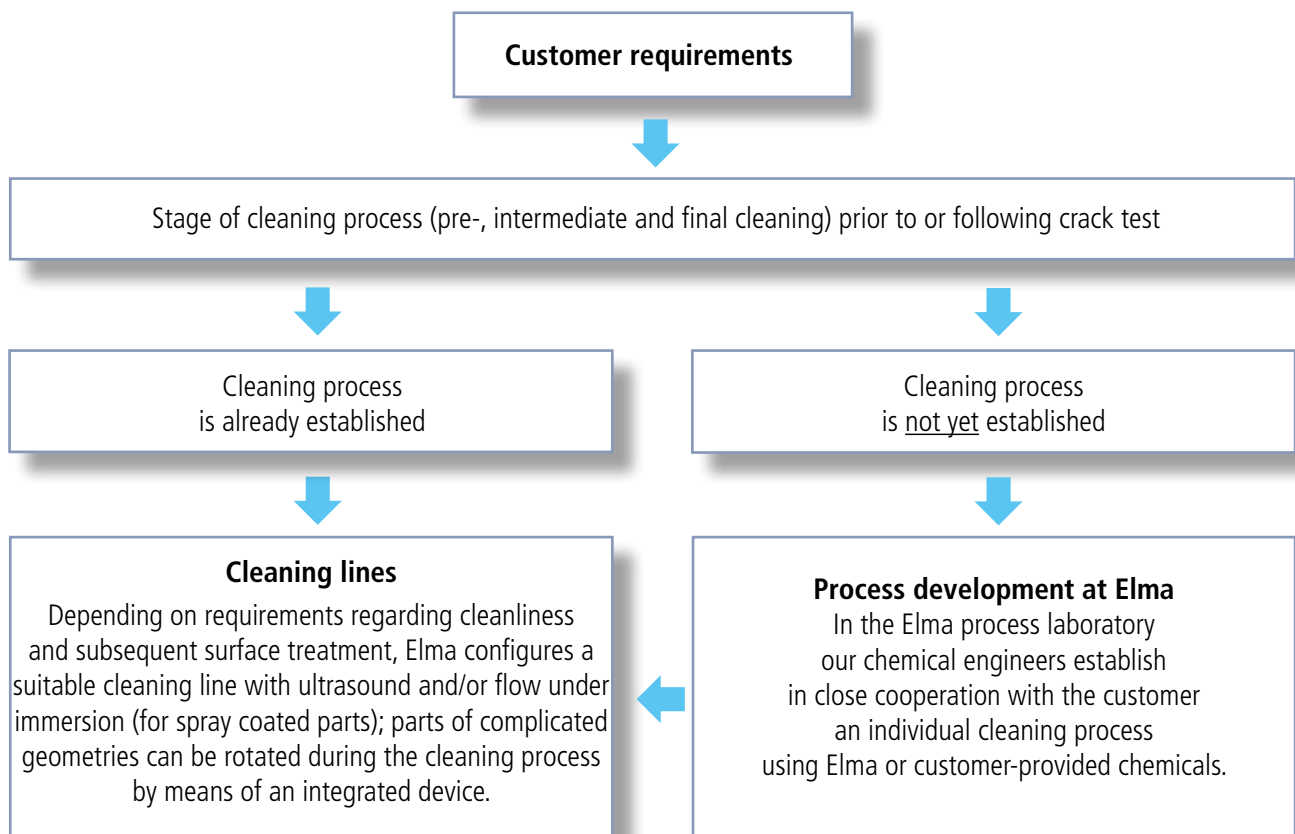
- Cleaning of aircraft engine parts
- Cleaning in MRO and prior to coatings
- Pre-, intermediate and final cleaning
- Cleaning before/after NDT/FPT

# Elma cleaning systems for aerospace applications

At Elma you get an all-in-one solution for your individual cleaning task. Modern ultrasonic and cleaning technologies, experience in industrial cleaning and plant construction for decades as well as a modern process laboratory for individual cleaning tests - all from one single source.

With Elma cleaning lines it is possible to easily clean turbine or other parts during production as well as for FPT/NDT. For parts that cannot be cleaned with ultrasound, Elma offers an alternative cleaning process with flow under immersion.

Peripheral equipment for ultrasonic bath care, water treatment as well as thoughtout accessories like baskets or transport systems ensure optimum cleaning conditions, durability of the cleaning systems and support the cleaning process.



## Advantages of Elma cleaning technology:

- **Validated cleaning units and lines** for each cleaning process step
- Quality assurance and documentation via data logger
- Assistance for the risk analysis (FMEA) and IQ, OQ for the validation of cleaning lines and processes
- Up-to-date cleaning technologies like ultrasonic cleaning with multifrequency or alternatively flow under immersion
- Process laboratory for cleaning tests
- After Sales Service in Europe, the USA and Asia



# Elmasonic X-tra line

## Semi-automatic or manual ultrasonic cleaning systems

Our modular concept consists of standardized components – from ultrasound equipment, transport systems and enclosures to ancillary devices. Thus these modular systems are easily and quickly upgradeable in response to changed cleaning requirements.



*X-tra line pro manual  
with 3 ultrasonic units and 1 rinsing unit*



*X-tra line pro manual  
with rinsing station*

- Multi-frequency technology: 25/45 or 37/130 kHz
- Sweep-function for optimal cleaning results
- Degas-function  
for quick degassing, esp. of a fresh cleaning bath
- Individually activatable Pulse-function  
for increased performance with difficult cleaning tasks
- Optional turbulence flow available
- Cleaning lines have a compact design and can be easily integrated into existing production processes
- Matching accessories, such as baskets and rinse station
- Optional ancillaries such as oil separator, filter pump units, etc.
- Easy to upgrade for automatic cleaning
- Highly cost-efficient cleaning line concept



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# Elmasonic X-tra line

## Fully-automated and optionally enclosed cleaning systems

The modular Elmasonic X-tra pro and precision series are multi-frequency systems with 25/45 or 37/130 kHz, offering 5 tank sizes. Ideally for fine and ultra-fine cleaning of industrial precision parts.

All cleaning lines are ready for extensions as loading and unloading conveyors, etc. Furthermore a wide range of accessories like baskets, etc. is available. Accessories may also be added later on to adapt the system to changed requirements.

### Equipped with sophisticated technology

- Ultrasonic units are basically equipped with bottom ultrasound; optionally units with additional lateral ultrasound are available
- Individual power control integrated
- Individually activatable Pulse-function for increased performance with difficult cleaning tasks
- Sweep-function for an even sound field distribution and optimal cleaning results
- Degas-function for quick degassing, esp. of a fresh cleaning bath
- Rounded tank corners, electropolished tank surfaces and specially designed hard piping for optimised drainage and to prevent entrainments



### Sustainable energy efficiency

- All units are sound and heat insulated
- Automated systems have a weekly time switch for starting and shutting down the system automatically
- Cascaded, connected cleaning tanks to reduce water consumption

### Modular software and user-friendly visualization

- IPC-based control
- Data-logger, OEE, trend analysis, SMS messenger and energy management
- Optional use of manual or automatic barcode/data-matrix code scanners or RFID-systems
- Connection to MES or customer IT-systems possible
- Touch panel for a user-friendly visualization of the control surface

# Elmasonic ultrasonic serial devices

for heavy-duty applications with modern ultrasonic technology

## Elmasonic xtra TT

- 4 sizes available from 3 up to 18 litres
- Permanently integrated Sweep-function for uniform distribution of the ultrasonic effect in the entire ultrasonic bath.
- Switchable Dynamic-function increases the peak ultrasonic performance. This improves the effectivity of cleaning and makes it possible to remove even the most stubborn contaminants.
- Individually setttable limit temperature with LED warning indicator on reaching the temperature. Sensitive parts like jewellery or plastic parts are handled gently.
- Temperature-controlled Auto-Start function: the ultrasound starts automatically when the preselected temperature is reached.
- Clearly arranged, control unit and integrated safety shutdown



Elmasonic xtra TT 30H

## Elmasonic xtra ST

- 8 sizes available from 30 up to 255 litres
- Multi-frequency at 25/45 kHz: individually setttable frequencies depending on the cleaning job
  - 25 kHz for rough part cleaning and removing stubborn contaminants like lapping and polishing paste
  - 45 kHz for cleaning sensitive parts and surfaces from contaminants like oils, drilling emulsions and greases. Also ideal for hard metal and glass surfaces in industrial and artisan environments as well as jewellery manufactures.
- Integrated Sweep-function and switchable Pulse-function
- Dynamic-function: The Sweep- and Pulse-functions run alternately on an automatic basis. The ultrasonic performance is temporarily increased by up to 20%. At the same time, the even ultrasonic sound field distribution in the ultrasonic bath enhances the cleaning effect.
- Short heating times due to the high heating capacity with temperature regulation (30 - 80°C)
- High user safety with automatic safety shutdown
- Easy to service due to quick changing of the generator and operator control unit. This means that the devices are ready for use again very quickly.



Elmasonic xtra ST 600H  
with hinged flip-top noise protection cover



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# Smart accessories and ancillaries

## Customer-specific baskets and inserts



Depending on requirements and cleaning tasks, there are

- standardized and
- customized options.

## Bath care systems



- Oil separators
- Filter pump units for surface or bottom skimming

## Water treatment systems



- Water softening
- Re-osmosis
- Demineralised water circuit

## Automatic dosing units



For the dosage of the cleaning agents

- Volumetric
- Guide value-based
- Based on the measurement of surfactants

## Rotation units



For rotating the parts for cleaning

- Lift rotation
- Vertical rotation
- Rotary baskets

## Flow under immersion/ turbulence flow



Integrated stainless-steel jet nozzles for pressure flushing and turbulence rinsing for applications without ultrasound



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# Process laboratory, cleaning tests and worldwide service

## One-stop-shopping at Elma

### Elma process laboratory

In the Elma process laboratory, our process engineers develop together with our customers tailor-cut process solutions for individual cleaning tasks. A whole cleaning system concept is then developed and designed including cleaning processes and procedures as well as suitable cleaning chemicals.

Our process laboratory performs cleaning tests on a daily basis and verifies that the test results meet the cleanliness requirements.

In the adjacent application laboratory, we optimize our cleaning chemicals and develop new cleaning agents.



### Worldwide service and consulting

A global network of service centres and sales partners ensures high system availability and fast response times for all Elma products.

- Worldwide service and sales partners
- Call center for technical advice and service
- Remote maintenance and support via VPN or RAS
- Targeted service training for customer technicians and service personnel
- Optional regular user trainings
- Fast and easy delivery of spare parts



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## About us

Ultrasonic Cleaning Technology · Cleaning Chemistry · Process Laboratory



Perfect cleaning results and high quality products are highly important not only for Elma but also and particularly for the aerospace industry. With the large and thought-out product range, Elma is offering top quality cleaning in all stages.

With ultrasonic and steam cleaning technologies as our core competencies and our process lab with its own cleaning agent development, we provide competent and reliable advice and tailor-cut cleaning solutions to our customers for even the most difficult cleaning tasks.

Furthermore we provide top quality in all manufacturing stages from design and development to service and after-sales-service.

Our process laboratory develops our own for industrial applications optimized cleaning agents which are produced in our plant.

A worldwide network of partners and distributors ensures high availability of equipment and systems with short response times.

Years of experience in industrial precision cleaning, innovative research and development make us the partner of choice for you. We consider trust and reliability to be the foundation of a sustainable partnership.

By providing you with Elma products and services, we want to contribute to your success as reliable, competent partner!



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