

A close-up, high-angle photograph of a jet engine's front section. The image shows the large, multi-bladed fan at the front, followed by the compressor case. The metal components are polished and reflective, with bright highlights against a dark background. The engine is set against a solid yellow rectangular background.

AEROSPACE ENGINEERING



## FPT INDUSTRIE SPA

Over 50 years of experience in development of highly reliable, innovative solutions

Full sales, after - sales support and program management service all around the world

### FPT INDUSTRIE SPA

Oltre 50 anni di esperienza nello sviluppo di soluzioni altamente affidabili e innovative.

Supporto completo per la vendita, post-vendita e servizio di gestione programmi in tutto il mondo

### FPT INDUSTRIE SPA

Über 50 Jahre Erfahrung in der Entwicklung höchst zuverlässiger, innovativer Lösungen.

Umfassende Unterstützung vor und nach dem Verkauf inklusive Programm- Management Service weltweit

### FPT INDUSTRIE SPA

Plus de 50 ans d'expérience dans le développement des solutions hautement fiables et innovantes.

Ventes complètes, support après-vente et service de gestion des programmes au niveau mondial



## SPACE AVIATION





# CORPORATE SYSTEM

UNIQUE IN THE WORLD



FPT INDUSTRIE S.p.A. has been producing high precision numerically controlled boring and milling machines for the general mechanics and mould making sectors for over 50 years. It was founded in 1969 and since then, FPT INDUSTRIE S.p.A. has significantly increased and consolidated its presence in international markets, asserting its brand as a synonym of high-tech, precision and reliability. The company's development has not slowed down over time, thereby demonstrating the validity of its production and commercial strategies.

FPT INDUSTRIE S.p.A. owes its success to the continuous generation of innovative ideas and especially to the ongoing research to improve processes, products, services and its corporate image. This research focuses particularly on the market needs while being very sensitive to the importance of the reliability of its machines and the quality of the service provided to the end customer.

FPT INDUSTRIE S.p.A. produce da più di 50 anni macchine alesatrici e fresatrici a controllo numerico di alta precisione per il settore della meccanica generale e per il settore della stampistica. Dalla sua costituzione, avvenuta nel 1969, ad oggi, FPT INDUSTRIE S.p.A. ha incrementato e consolidato significativamente la propria presenza sui mercati internazionali, affermando il proprio marchio come sinonimo di alta tecnologia, precisione ed affidabilità. Lo sviluppo dell'azienda non ha conosciuto rallentamenti nel tempo a conferma della validità delle proprie strategie produttive e commerciali.

FPT INDUSTRIE S.p.A. deve il suo successo alla continua produzione di idee innovative e soprattutto al continuo lavoro di ricerca nell'ambito del miglioramento dei processi, dei prodotti, dei servizi e della propria immagine aziendale. Tale ricerca è particolarmente attenta alle esigenze del mercato e nel contempo molto sensibile all'importanza dell'affidabilità delle proprie macchine e alla qualità del servizio al cliente finale.

FPT INDUSTRIE S.p.A. produziert seit mehr als 50 Jahren Ausbohr- und Fräsmaschinen von hoher Präzision mit numerischer Steuerung für den Maschinenbau im allgemeinen und für den Formenbau. Von ihrer Gründung 1969 bis heute hat FPT INDUSTRIE S.p.A. ihre Präsenz auf dem internationalen Markt stark erweitert und konsolidiert. Damit steht die Marke als Synonym für Technologie, Präzision und Zuverlässigkeit. Die Produktions- und Vertriebsstrategien des Unternehmens haben sich als erfolgreich erwiesen, denn das Wachstum ist in all den Jahren konstant geblieben. Seinen Erfolg verdankt das Unternehmen FPT INDUSTRIE S.p.A. ständigen innovativen Ideen und vor allem der kontinuierlichen Forschungstätigkeit zur Verbesserung der Verfahren, Produkte und Leistungen sowie des Unternehmensbildes. Die Forschung achtet besonders auf die Marktanforderungen und ist gleichzeitig sehr sensibel in Bezug auf die Bedeutung der Zuverlässigkeit ihrer Maschinen und der Qualität des Kundendienstes für den Endkunden.

La société FPT INDUSTRIE S.p.A. fabrique des alésouses et des fraises à contrôle numérique de haute précision pour les secteurs de la mécanique générale et du moulage depuis plus de 50 ans. Depuis sa création en 1969, FPT INDUSTRIE S.p.A. a considérablement augmenté et renforcé sa présence sur les marchés internationaux, imposant sa marque comme un synonyme de haute technologie, de précision et de fiabilité.

Le développement de l'entreprise n'a jamais ralenti au fil du temps, témoignant de la réussite de ses stratégies commerciales et de production.

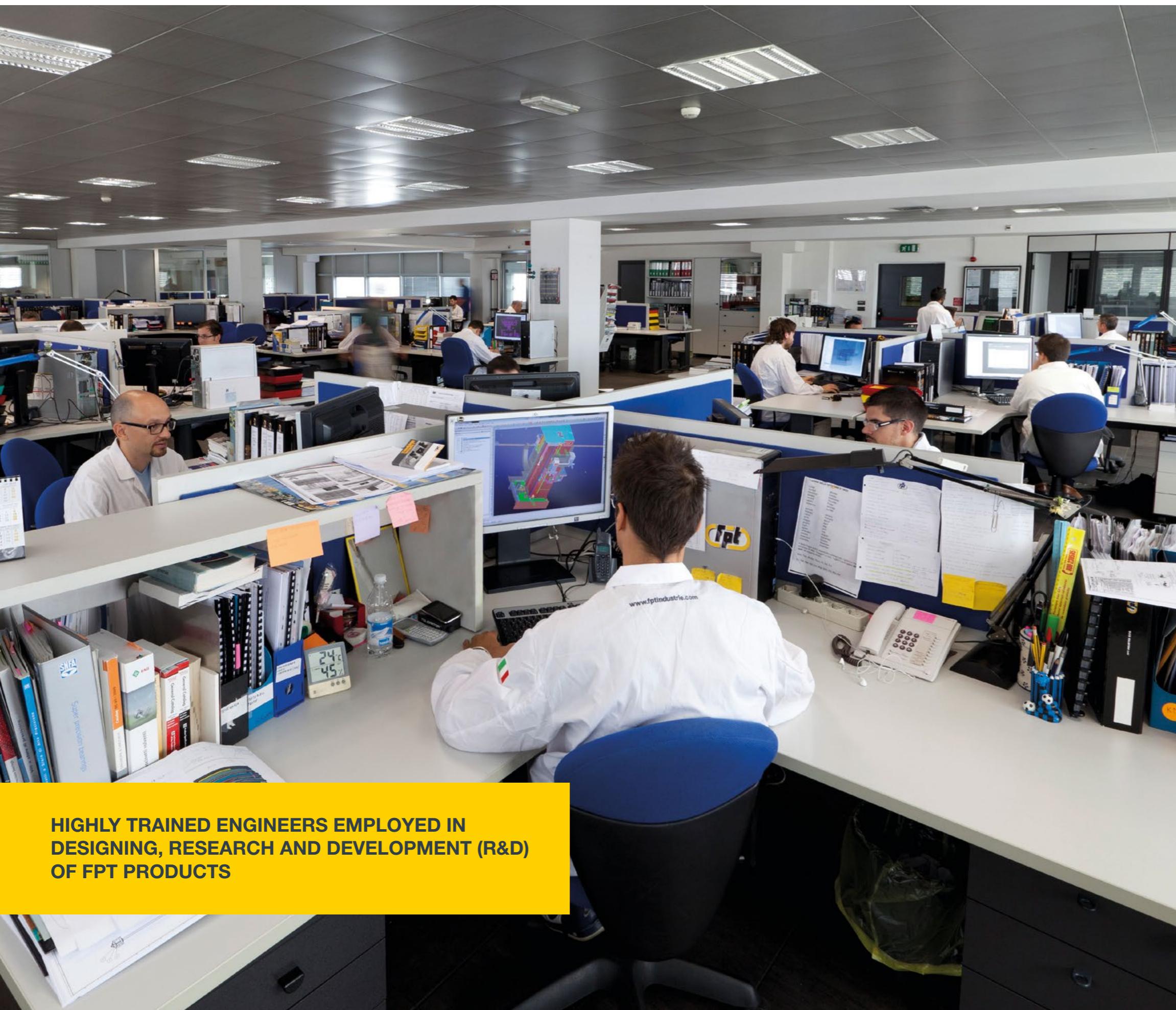
FPT INDUSTRIE S.p.A. doit son succès à la production continue d'idées innovantes et surtout au travail constant de recherche en vue de l'amélioration des processus, des produits, des services et de l'image de l'entreprise. Cette recherche est à la fois particulièrement attentive aux exigences du marché et ultra sensible à l'importance de la fiabilité de ses machines et de la qualité du service fourni au client final.





# PATENTED SOLUTIONS

MAIN SOLUTIONS



**HIGHLY TRAINED ENGINEERS EMPLOYED IN  
DESIGNING, RESEARCH AND DEVELOPMENT (R&D)  
OF FPT PRODUCTS**



The monolith column with lowered trim; rectangular RAM with variable section; 4 guideway system, for both the vertical axis and the RAM, ensure the highest optimization for rigidity



The HYDROQUILL technology revolutionizes the benchmark parameters in terms of accuracy, productivity and life of the big-sized, high performance boring machines



The RAM axis and the boring axis are equipped with a dynamic control system of geometric precision that allows the utmost positioning accuracy along the whole stroke.



Clever hydrostatic thrust-bearing "tilter" for the table bearing and rotation with automatic unbalancing control of the loads to be machined, with adjustment data self-learning (Patent Int. Pend.)



Extracal is an innovative measuring system that operates in real time and measures the position of the working axes independently from the structural strains and/or bending stress of the machine



MARES 4.0 + is the only platform that allows the interconnection of machines from different manufacturers and with different electronics and operator interface directly integrated on the machines

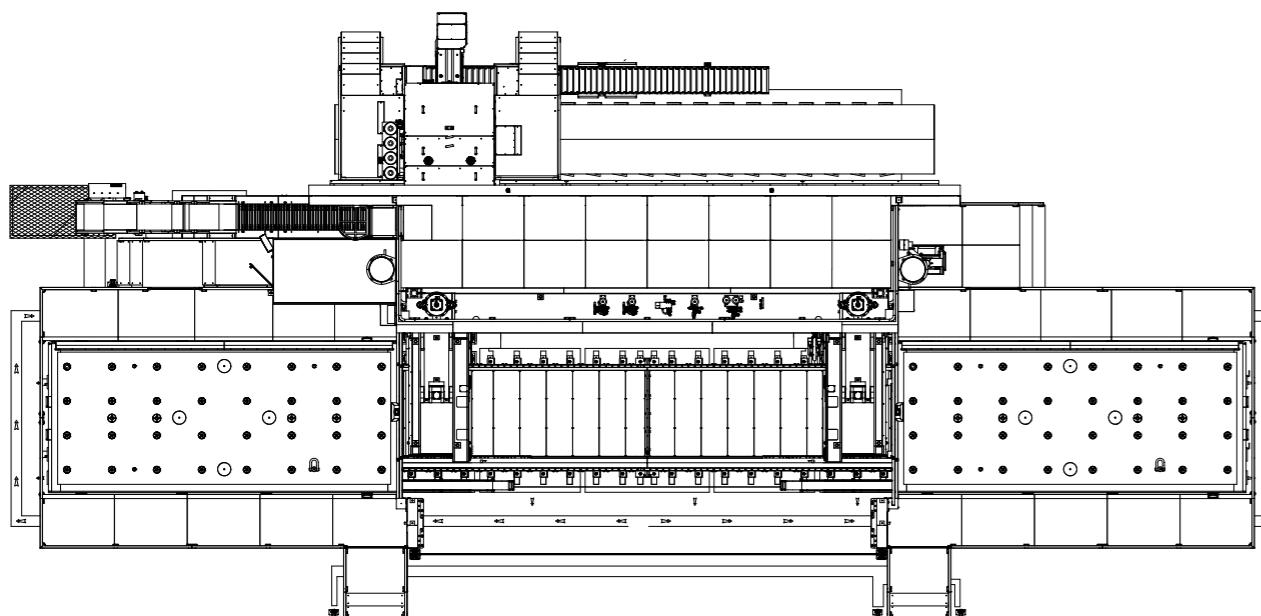


## ENGINEERING DEPARTMENT

### CUSTOMIZED SOLUTIONS



### DEDICATED LAYOUT



## ENGINEERING SOLUTIONS

### HEADS / AUTOMATIC ACCESSORIES CHANGE



**TUPC** 1993 invented by **FPT**



**TUPC HT**



**TUDX**



**TTWM**



**TTWT**



**UT S/B**



**TO**

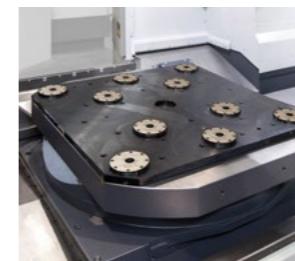


**ACC SYSTEM**

### OPTIONS



**ATC**



**FMZ**



**APC**



**FMS**

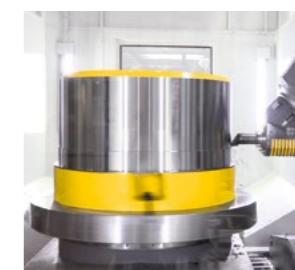
### TABLES RANGE



**TRT**



**RT-T**



**RT**



**TILTING**



# PROJECT MANAGEMENT

CONTINUOUS AND DIRECT SUPPORT FROM A DEDICATED PROJECT MANAGER DURING THE ENTIRE PROJECT

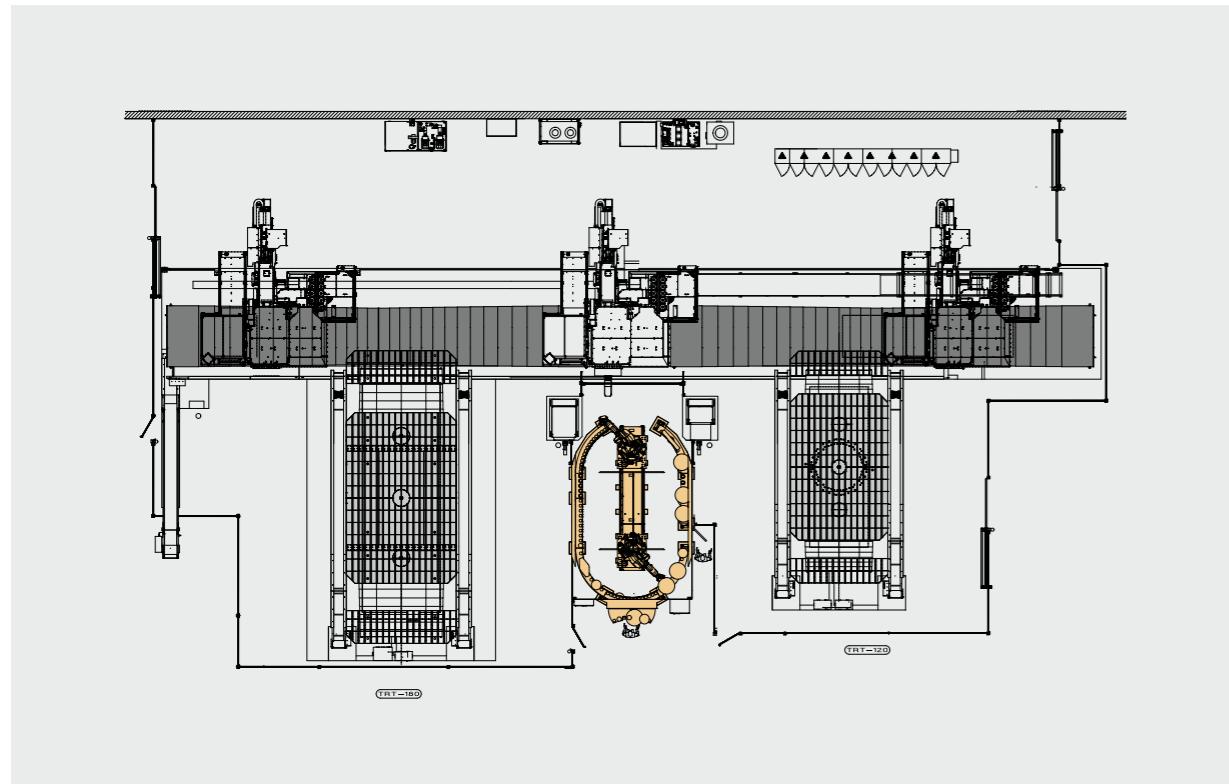
| ID | Task Name  | Start        | Finish       |
|----|--|--------------|--------------|
| 1  | TMXXX TESSEN   | Mon 04/11/19 | Fri 10/04/20 |
| 2  | Machine assembly and shipment cycle at FPT premises                | Mon 04/11/19 | Fri 28/02/20 |
| 3  | PO   | Mon 04/11/19 | Mon 04/11/19 |
| 4  | Machine customization and testing activities                       | Tue 05/11/19 | Thu 21/11/19 |
| 5  | Pre-acceptance at FPT premises                                     | Fri 22/11/19 | Fri 22/11/19 |
| 6  | Disassembly, packing and shipment                                  | Mon 25/11/19 | Fri 28/02/20 |
| 7  | Machine delivery at XXX site and installation/commissioning phase  | Thu 27/02/20 | Tue 07/04/20 |
| 8  | Machine and components arrival and truck unloading (customer care) | Thu 27/02/20 | Fri 28/02/20 |
| 9  | Installation crew arrival and site inspection                      | Mon 02/03/20 | Tue 03/03/20 |
| 10 | Workshop organization, beds alignment and grouting                 | Mon 02/03/20 | Fri 06/03/20 |
| 11 | Column assembly and auxiliary positioning and wiring               | Mon 09/03/20 | Fri 13/03/20 |
| 12 | Machine covers assembly and final erections                        | Mon 16/03/20 | Wed 18/03/20 |
| 13 | Machine connection, start-up and rough geometry testing            | Thu 19/03/20 | Thu 26/03/20 |
| 14 | Machine debug, fine geometry check and laser test                  | Fri 27/03/20 | Tue 07/04/20 |
| 15 | Final acceptance.  | Tue 07/04/20 | Tue 07/04/20 |
| 16 | Training sessions  | Wed 08/04/20 | Fri 10/04/20 |
| 17 | CFAIMO Basic functions/ordinary maintenance                        | Wed 08/04/20 | Wed 08/04/20 |
| 18 | CFAUM Advanced functions   | Thu 09/04/20 | Fri 10/04/20 |
| 19 | TESEN 100% functionality test and final acceptance                 | Mon 02/03/20 | Fri 10/04/20 |
| 20 | Bridge crane (if available)  | Mon 02/03/20 | Fri 10/04/20 |
| 21 | Mobile crane if necessary to lift the machine beds.                | Wed 04/03/20 | Thu 05/03/20 |
| 22 | Beds grouting  | Wed 04/03/20 | Wed 04/03/20 |
| 23 | Mobile crane to lift the column                                    | Mon 09/03/20 | Mon 09/03/20 |

# SERVICE AND SUPPORT

HEADS AND ACCESSORIES ASSEMBLY DEPARTMENT



## LAYOUT DEVELOPMENT



## TEST BENCH AND SETTINGS





## HORIZONTAL MACHINE RANGE



HORIZONTAL BORING MACHINE



T-STYLE MILL / TURN MACHINE



BORING AND / OR MILLING MACHINE



MILLING MACHINE



T-STYLE BORING MACHINE



FRICTION STIR WELDING MACHINE

## VERTICAL MACHINE RANGE



LOW RAIL GANTRY



LOW RAIL GANTRY



MULTIPURPOSE UPPER GANTRY



LINEAR MOTORS UPPER GANTRY



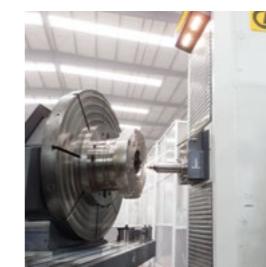
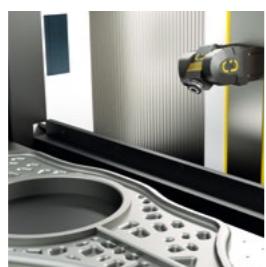
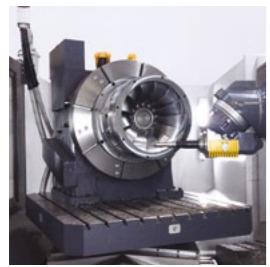
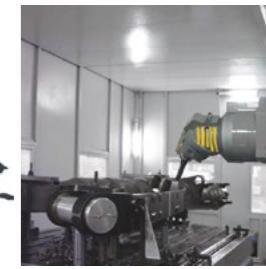
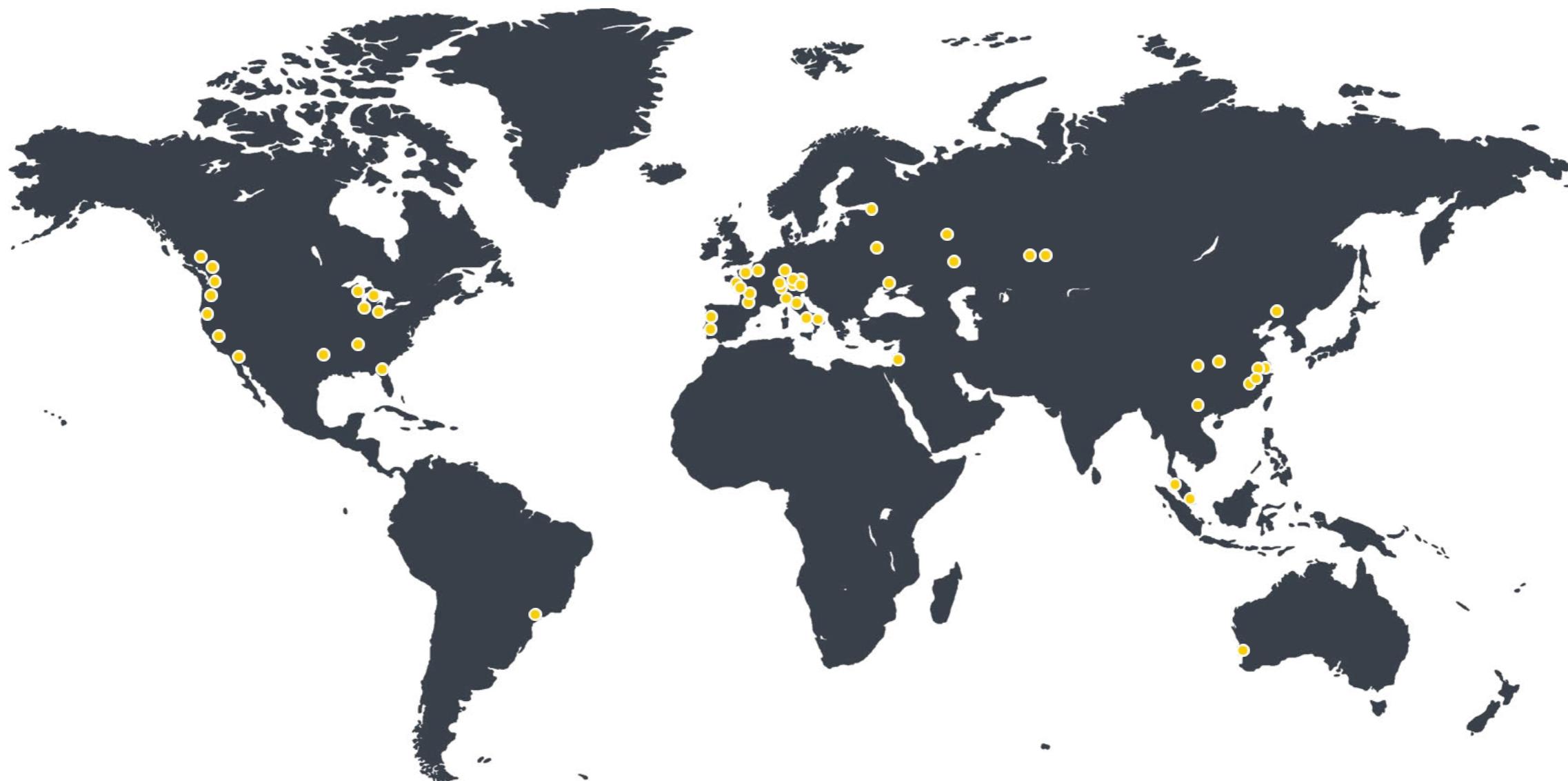
5 AXIS MACHINING CENTER



VERTICAL TURNING LATHE



## AEROSPACE REFERENCES WORLDWIDE



## WING STRUCTURE



1 WING RIB    2 FLAP TRACK    3 SPAR    4 STRINGER    5 PYLON

## FUSELAGE STRUCTURE



11 DOOR    12 CROSS BEAM    13 BULKHEAD    14 LATTICE FRAME    15 SEAT TRACK



## AERO ENGINE PART



6 ENGINE CASING    7 ENGINE CASING    8 ENGINE CASING    9 SHROUD    10 BLISK

## ASSEMBLY JIGS AND FIXTURES





AIRCRAFT ENGINE



LEAP MOTOR  
CASING  
IMPELLER  
BLISK  
TITANIUM COMPONENTS  
SUPER ALLOY RINGS  
LANDING GEAR

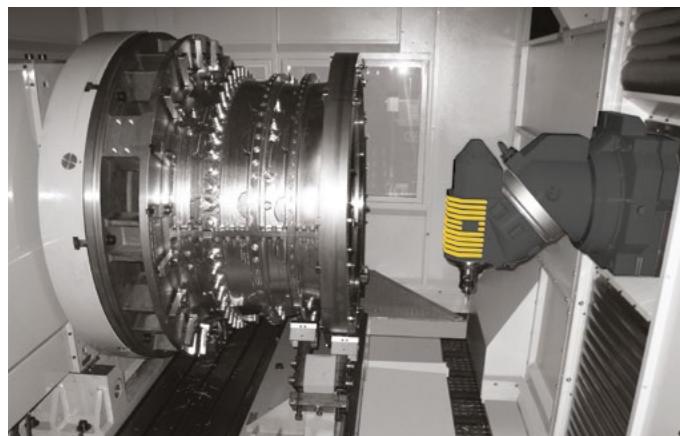


**CASTEL**  
TORUS



#### TRAVELS - CORSE - VERFAHRWEGE - COURSES

|  |              |                              |
|--|--------------|------------------------------|
| Longitudinal - Longitudinale - Longitudinale - Längs                             | mm (in)      | 2.000 - 3.000 (78,7 - 118,1) |
| Cross - Trasversale - Transversale - Quer  | mm (in)      | 1.800 (70,9)                 |
| Vertical - Verticale - Verticale - Vertikal                                      | mm (in)      | 1.800 - 1.300 (70,9 - 51,2)  |
| Feed rate - Velocità di avanzamento - Vitesse d'avance - Vorschubgeschwindigkeit | mm/min (ipm) | up to 25.000 (984,2)         |

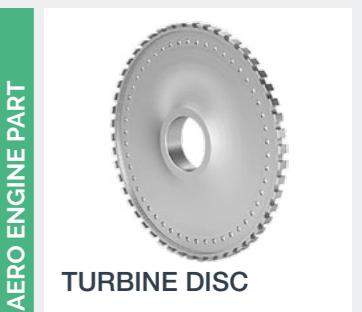
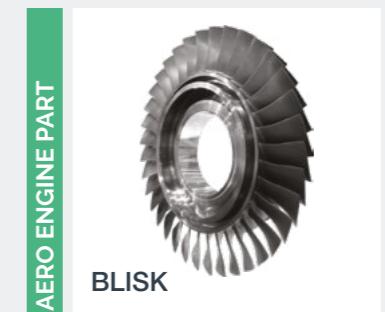


#### TRAVELS - CORSE - VERFAHRWEGE - COURSES

| RONIN 300  | RONIN 400                                    |
|--|--|
| Longitudinal - Longitudinale - Längs - Longitudinale     | mm (in) 4.000 + n x 2.000 (157,5 + n x 78,7) |
| Cross Travel - Corsa Trasversale - Quer - Transversale   | mm (in) 1.800 - 1.500 (70,9 - 59)            |
| Vertical Travel - Corsa Verticale - Vertikal - Verticale | mm (in) 3.000 - 2.500 (118,1 - 98,4)         |
|  | 4.000 - 3.500 (157,5 - 137,8)                |

#### BORING BAR **RONIN SBS**

| RONIN 300 SBS   | RONIN 400 SBS                   |
|---|---------------------------------|
| Boring Bar Diameter - Diametro Bareno<br>Durchmesser Bohrstange - Barre d'alésage Diamètre                | mm (in) 130 (5,1) - 150 (5,9)   |
| Boring Bar Travel (W) - Bareno Transversale (W)<br>Bohrstange Quer (W) - Barre d'alésage Transversale (W) | mm (in) 700 (27,6) - 800 (31,5) |
|   | 700 (27,6) - 800 (31,5)         |




**TRAVELS - CORSE - VERFAHRWEGE - COURSES**

|  |         |  |
|--|---------|--|
| Longitudinal - Longitudinale - Längs - Longitudinale     | mm (in) | 2.500 - 3.000 - 4.000 - 5.000 (98,4 - 118,1 - 157,5 - 196,9) |
| Cross travel - Corsa Trasversale - Quer - Transversale   | mm (in) | 1.500 - 2.000 - 2.500 - 3.000 (59,1 - 78,7 - 98,4 - 118,1)   |
| Vertical travel - Corsa Verticale - Vertikal - Verticale | mm (in) | 2.000 - 2.500 - 3.000 (78,7 - 98,4 - 118,1)                  |

**BORING BAR**

|   |         |                         |
|---|---------|-------------------------|
| Boring spindle diameter - Diametro mandrino di alesatura<br>Bohrspindel-Durchmesser - Diamètre de la broche d'alésage | mm (in) | Ø 130 - 150 (5,1 - 5,9) |
| Boring bar length (W) - Corsa bareno (W)<br>Bohrstange Länge (W) - Barre d'alésage longueur (W)                       | mm (in) | 800 - 900 (31,5 - 35,4) |

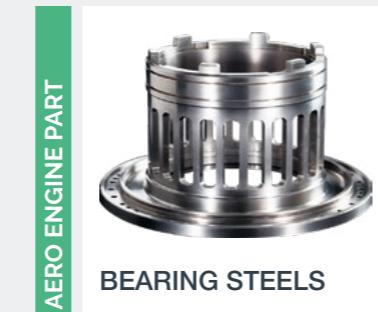

**TRAVELS - CORSE - VERFAHRWEGE - COURSES**

|   |              | STINGER 180          | STINGER 280 APC      |
|---|--------------|----------------------|----------------------|
| Longitudinal - Longitudinale - Längs - Longitudinale                              | mm (in)      | 1.750 (68,9)         | 2.000 (78,7)         |
| Cross - Trasversale - Quer - Transversale   | mm (in)      | 1.400 (55,1)         | 1.400 (55,1)         |
| Vertical - Verticale - Vertikal - Verticale                                       | mm (in)      | 800 (31,5)           | 800 (31,5)           |
| Feed rate - Velocità di avanzamento<br>Vorschubgeschwindigkeit - Vitesse d'avance | mm/min (ipm) | up to 35.000 (1.378) | up to 35.000 (1.378) |


**AERO ENGINE PART**

**TURBINE COMBUSTOR**

**AERO ENGINE PART**

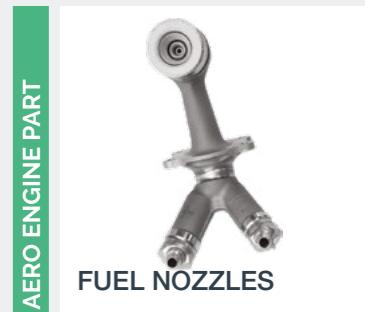
**FAN BLADE**

**AERO ENGINE PART**

**BEARING STEELS**

**AERO ENGINE PART**

**COMPRESSOR**

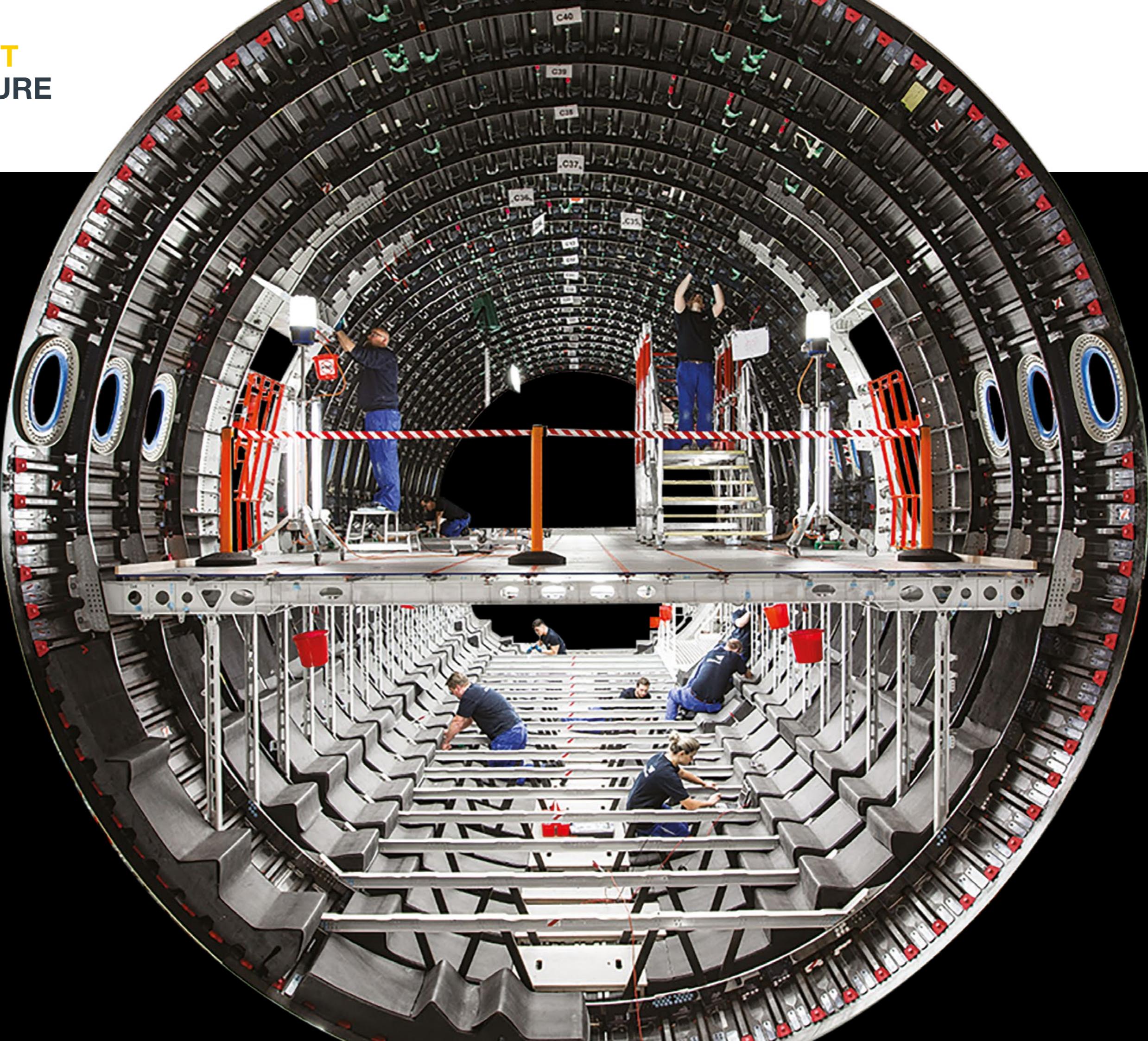
**AERO ENGINE PART**

**CONE SUPPORT**

**AERO ENGINE PART**

**FUEL NOZZLES**



# AIRCRAFT STRUCTURE



ALUMINUM FRAMES  
STRINGERS  
BULKHEAD



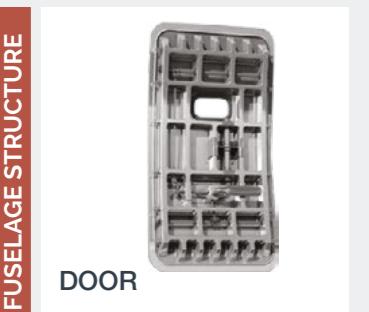
#### TRAVELS - CORSE - VERFAHRWEGE - COURSES

|  |         |                             |
|--|---------|-----------------------------|
| Longitudinal - Longitudinale - Längs - Longitudinale     | mm (in) | 7.000 (275,6)               |
| Cross travel - Corsa Trasversale - Quer - Transversale   | mm (in) | 1.100 - 1.200 (43,3 - 47,2) |
| Vertical travel - Corsa Verticale - Vertikal - Verticale | mm (in) | 2.500 (98,4)                |

#### TILTING TABLE

Table dimension - Dimensione tavola - Dimension de la table - Tischabmessungen

mm (in) 6.500x2.500 (255,9x98,4)



**dinamax**autocal  
TECHNOLOGYAREXA40+  
PATENT PENDINGLINEAR  
MOTOR  
EQUIPPEDDOPPIA  
ROTANTE  
PRECISIONE

IAT

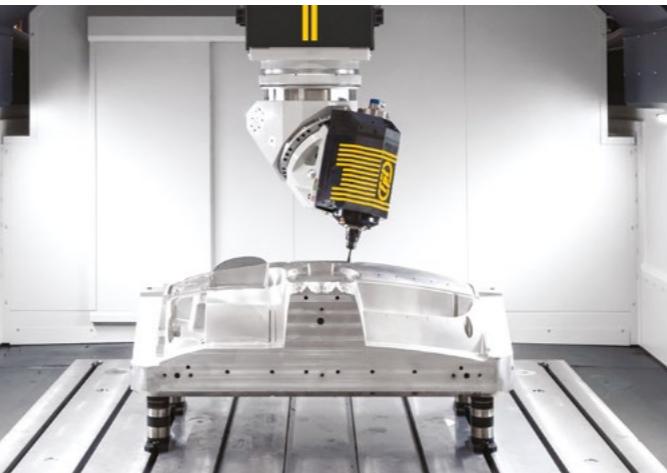
**dinospij**autocal  
TECHNOLOGYAREXA40+  
PATENT PENDINGDOPPIA  
ROTANTE  
PRECISIONE

## TRAVELS - CORSE - VERFAHRWEGE - COURSES

|   | DMX 1           | DMX 2                                   | DMX 3                                   | DMX 4   | DMX 5   |
|---|-----------------|---|---|---|---|
| Longitudinal - Longitudinale<br>Längs - Longitudinale                             | mm<br>(in)      | 3.000 + N x 1.000<br>(118,1 + N x 39,4) | 4.000 + N x 1.000<br>(157,5 + N x 39,4) | 6.000 + N x 1.000<br>(236,2 + N x 39,4)       | 8.000 + N x 1.000<br>(315,0 + N x 39,4)       |
| Cross - Trasversale - Quer - Transversale   | mm<br>(in)      | 2.200<br>(86,6)                         | 2.700<br>(106,3)                        | 3.200<br>(126,0)                              | 4.000<br>(157,5)                              |
| Vertical - Verticale - Vertikal - Verticale                                       | mm<br>(in)      | 1.100<br>(43,3)                         | 1.300 - 1.500<br>(51,2 - 59,0)          | 1.500 - 1.750 - 2.000<br>(59,0 - 68,9 - 78,8) | 1.500 - 1.750 - 2.000<br>(59,0 - 68,9 - 78,8) |
| Feed rate - Velocità di avanzamento<br>Vorschubgeschwindigkeit - Vitesse d'avance | mm/min<br>(ipm) | up to 50.000<br>(1.968,5)               | up to 50.000<br>(1.968,5)               | up to 50.000<br>(1.968,5)                     | up to 50.000<br>(1.968,5)                     |

## TRAVELS - CORSE - VERFAHRWEGE - COURSES

|  | DP L22       | DP L40                 |                        |
|--|--------------|------------------------|------------------------|
| Longitudinal - Longitudinale - Längs - Longitudinale                             | mm (in)      | 2.200 (86,6)           | 4.000 (157,5)          |
| Cross - Trasversale - Quer - Transversale  | mm (in)      | 2.500 (98,4)           | 2.500 (98,4)           |
| Vertical - Verticale - Vertikal - Verticale                                      | mm (in)      | 1.100 (43,3)           | 1.300 (51,2)           |
| Feed rate - Velocità di avanzamento - Vorschubgeschwindigkeit - Vitesse d'avance | mm/min (ipm) | up to 40.000 (1.574,8) | up to 40.000 (1.574,8) |



WING STRUCTURE

FLAP TRACK



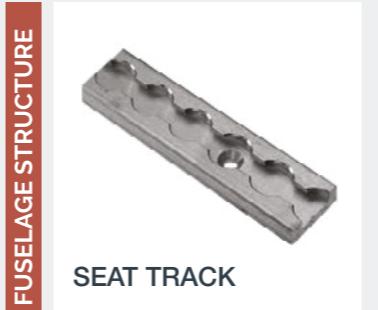
WING STRUCTURE

SPAR



FUSELAGE STRUCTURE

LATTICE FRAME



FUSELAGE STRUCTURE

SEAT TRACK



WING STRUCTURE

PYLON



FUSELAGE STRUCTURE

WINGTIPS



SPACE EXPLORATION

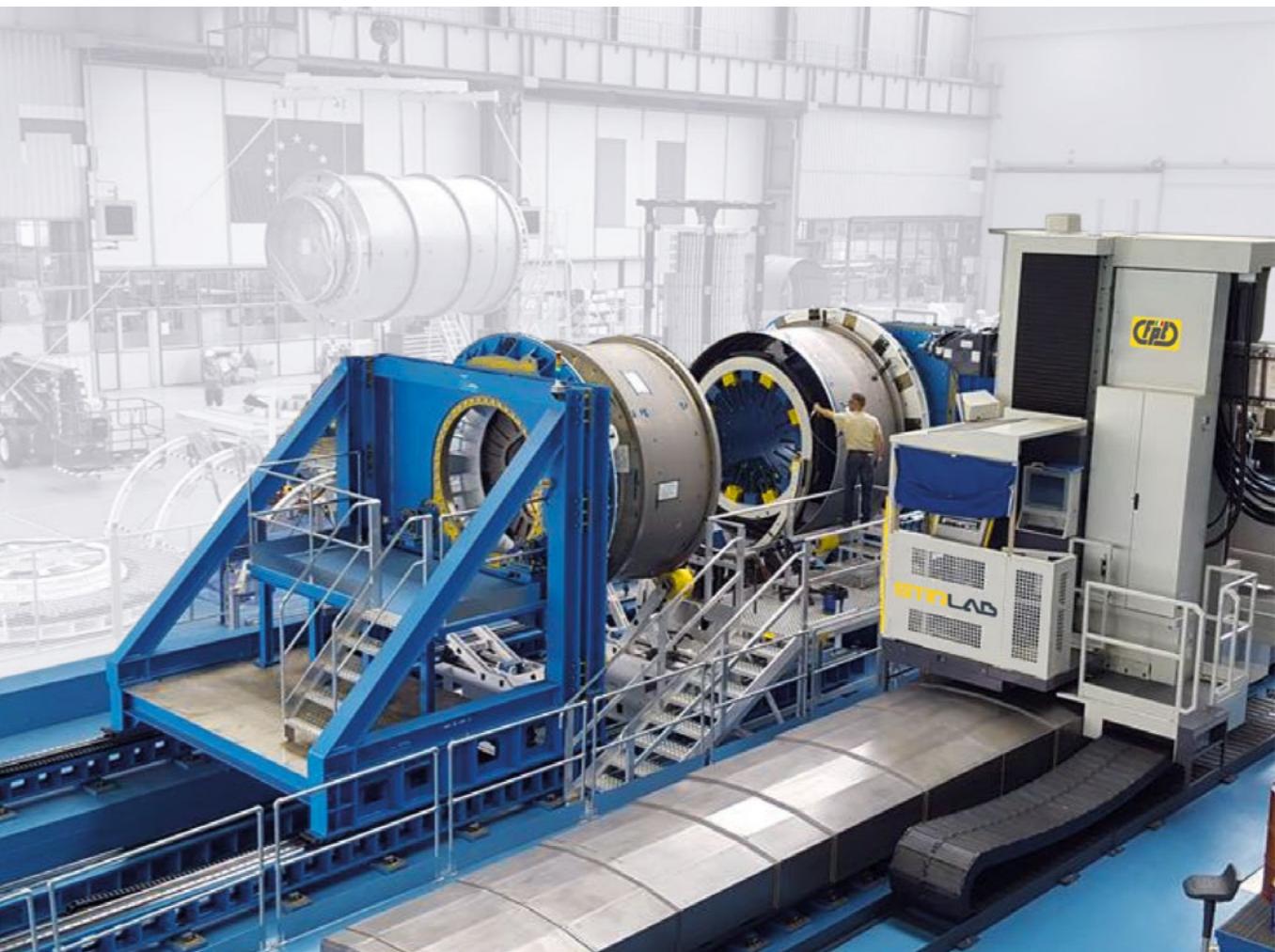


TANK  
BULKHEADS  
PANELS

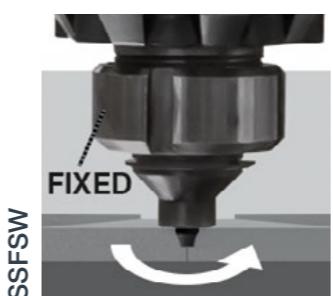
|                             |              |  |
|-----------------------------|--------------|--|
| Welding depth               | mm (in)      | up to 8 (0,3)                            |
| Axes simultaneous operation | n°           | 5  |
| Axis Thrust                 | kN           | 10                                       |
| Useful work space           | mm (in)      | 1.500 x 1.000 x 600 (59,0 x 39,3 x 23,6) |
| Maximum axial force         | kN           | 10                                       |
| Welding speed               | mm/min (jpm) | 1.200 (47,2)                             |
| Spindle speed               | rpm          | 2.000                                    |

MILLING OPTION

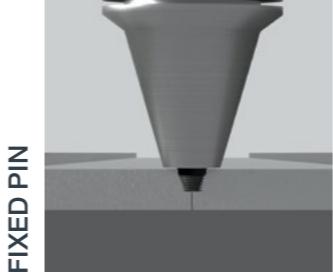
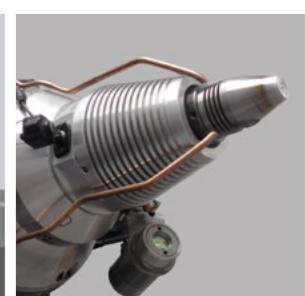
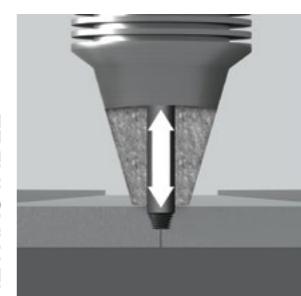
AVAILABLE



## FSW TECHNOLOGIES



RETRACTABLE



FIXED PIN



BOBBIN TOOL

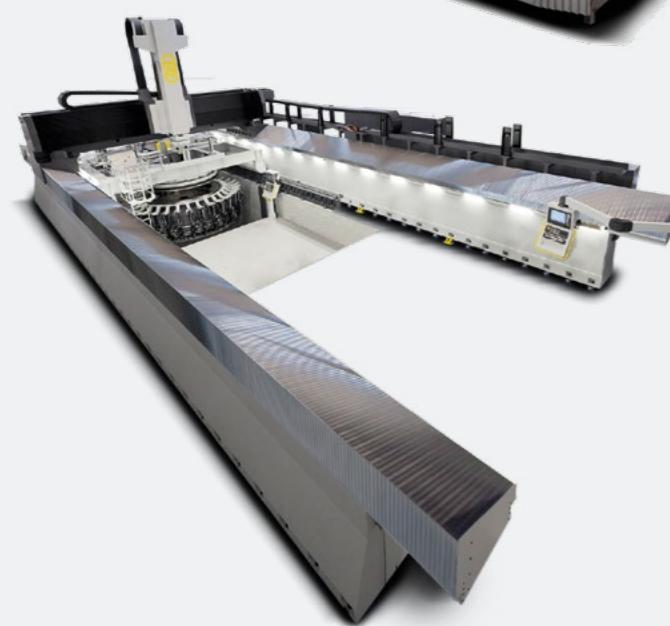
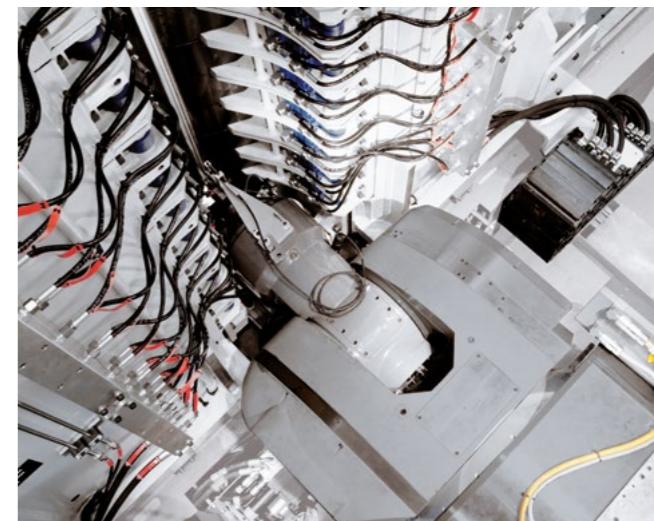




## STIRLAB

|                             |              |                                     |
|-----------------------------|--------------|-------------------------------------|
| Welding depth               | mm (in)      | up to 30<br>STIRLAB PLUS up to 50   |
| Axis simultaneous operation | n°           | up to 5                             |
| Axis Thrust                 | kN           | up to 100<br>STIRLAB PLUS up to 150 |
| X-axis                      | mm (in)      | 4.000 - ...                         |
| Y-axis                      | mm (in)      | up to 4.600                         |
| Z-axis                      | mm (in)      | up to 1.800                         |
| Maximum axial force         | kN           | 150                                 |
| Welding speed               | mm/min (ipm) | 2.500                               |

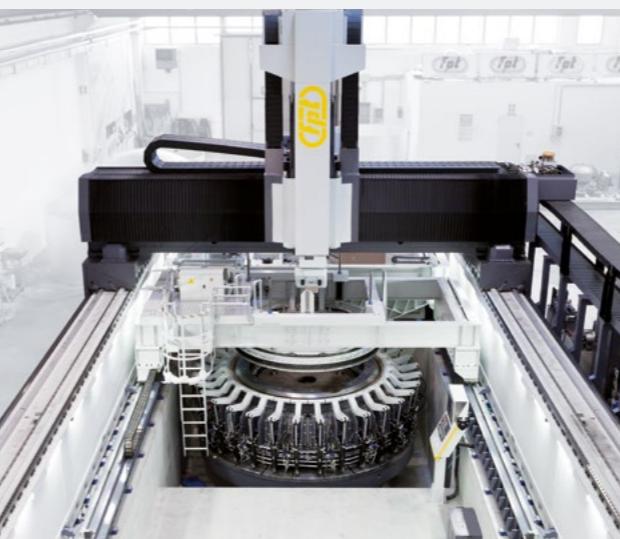
MILLING OPTION AVAILABLE



## STIRWALL

|                             |              |                                    |
|-----------------------------|--------------|------------------------------------|
| Welding depth               | mm (in)      | up to 30<br>STIRWALL PLUS up to 50 |
| Axis simultaneous operation | n°           | up to 5                            |
| Axis Thrust                 | kN           | 100<br>STIRWALL PLUS up to 150     |
| X-axis                      | mm (in)      | 4.000 - ...                        |
| Y-axis                      | mm (in)      | up to 6.000                        |
| Z-axis                      | mm (in)      | up to 2.500                        |
| Maximum axial force         | kN           | 150                                |
| Welding speed               | mm/min (ipm) | 2.500                              |
| Spindle speed               | rpm          | 1.500                              |

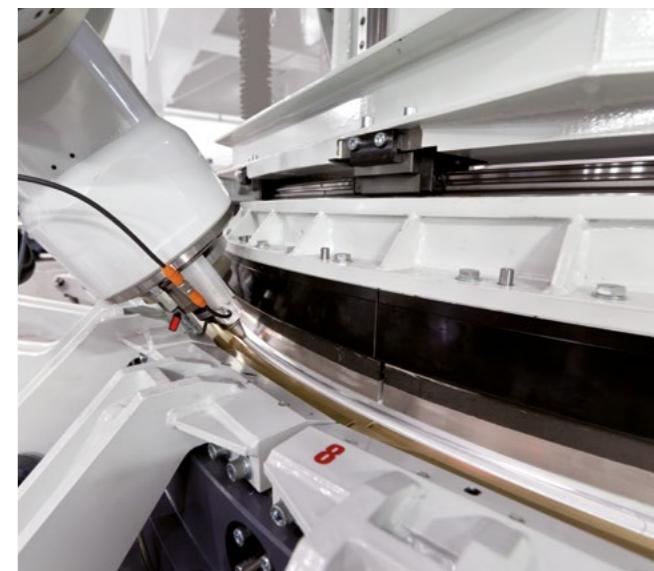
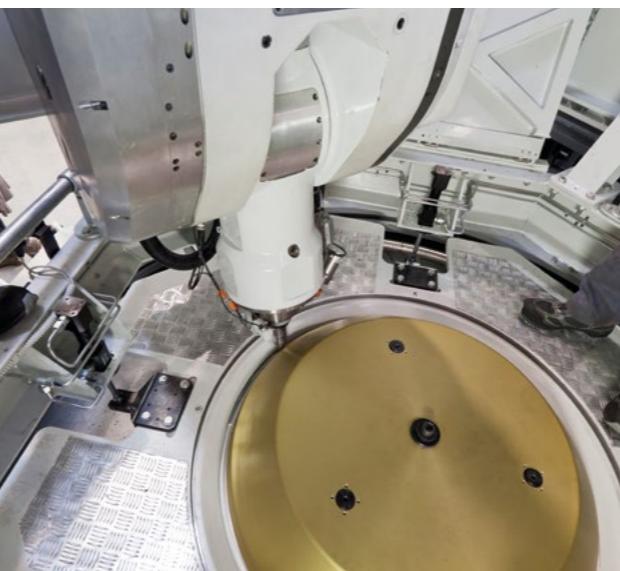
MILLING OPTION AVAILABLE



## STIRSPACE

|                             |              |                                     |
|-----------------------------|--------------|-------------------------------------|
| Welding depth               | mm (in)      | up to 30<br>STIRSPACE PLUS up to 50 |
| Axis simultaneous operation | n°           | up to 5                             |
| Axis Thrust                 | kN           | 100<br>STIRSPACE PLUS up to 150     |
| X-axis                      | mm (in)      | 4.000 - ...                         |
| Y-axis                      | mm (in)      | up to 6.000                         |
| Z-axis                      | mm (in)      | up to 2.500                         |
| Maximum axial force         | kN           | 150                                 |
| Welding speed               | mm/min (ipm) | 2.500                               |
| Spindle speed               | rpm          | 1.500                               |

MILLING OPTION AVAILABLE





## MACHINES CUSTOMISATION



DUAL TRAVERSE  
DUAL RAM  
DUAL COLUMN  
COUNTERPOSED  
TURN MILL  
TILTING TABLE SOLUTION

DUAL  
TRAVERSE



COUNTER  
POSED



DUAL  
RAM



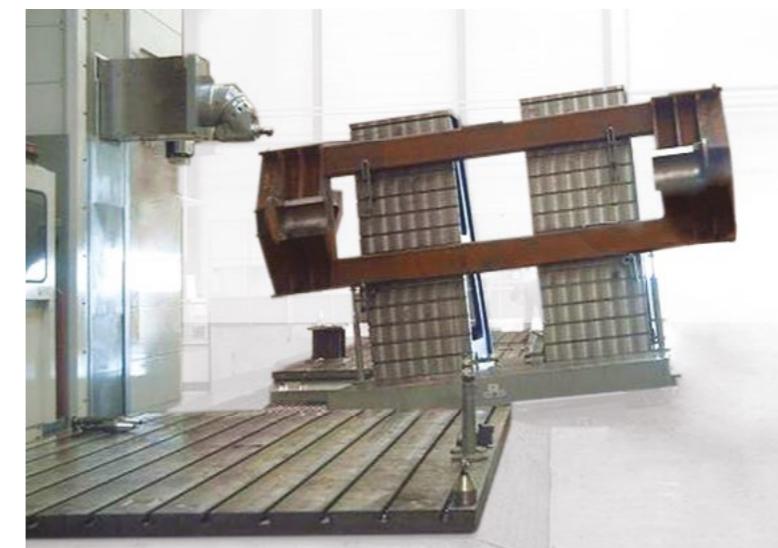
TURN  
MILL



DUAL  
COLUMN



TILTING TABLE  
SOLUTION





SOFTWARE AND ACCESSORIES



PLATFORM MARES 4.0+

**EXTRACAL**  
SCIENTIFIC INSTRUMENTS  
BY FPT

**FASTMILL**  
CLAMPING SOLUTIONS



# INDUSTRY 4.0 PLATFORM



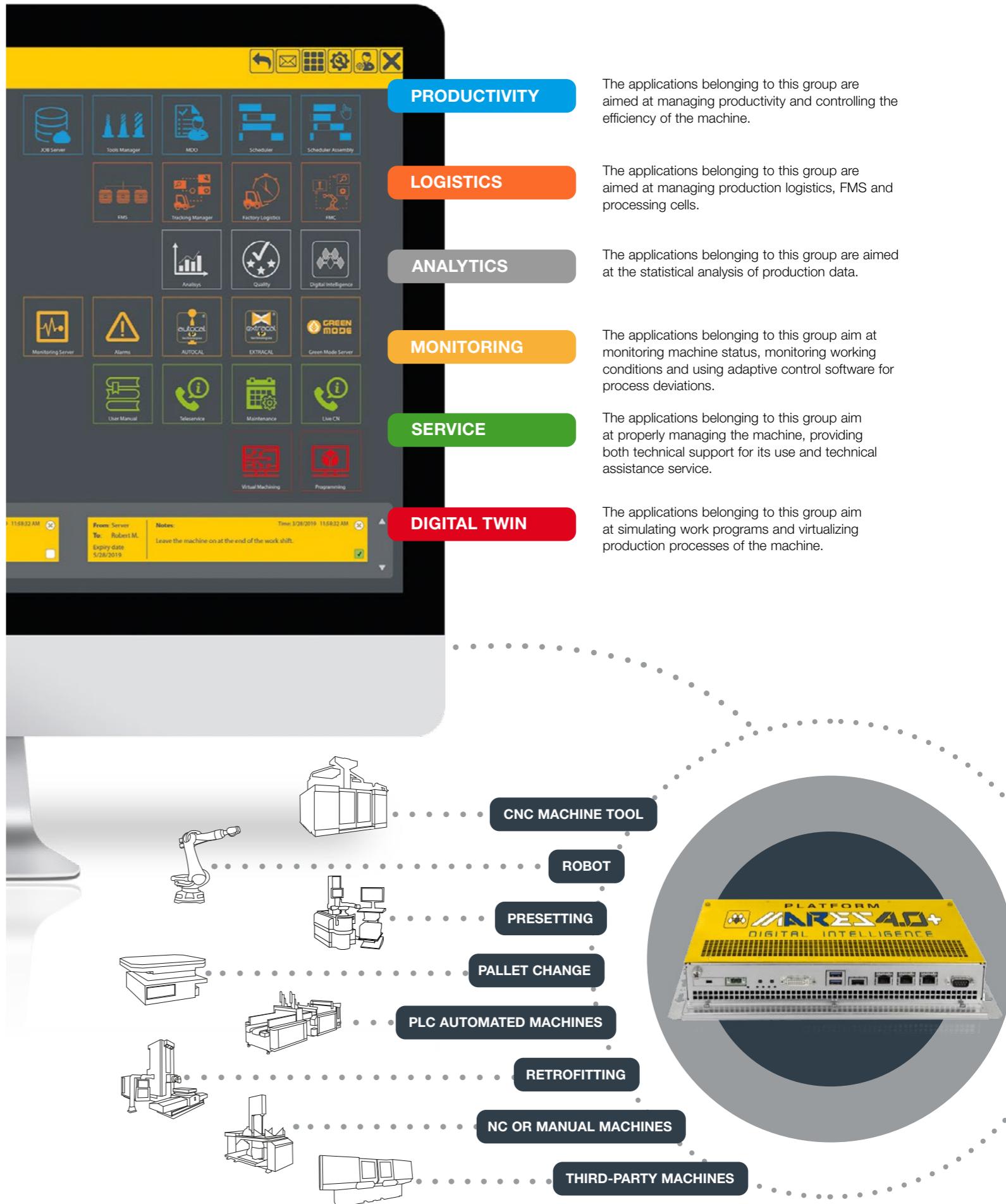
Platform MARES 4.0+ is the new exclusive IT platform for Industry 4.0 designed and developed by whom produces, uses and manages the integration of machines for over 50 years. MARES 4.0 + is the only platform that allows the interconnection of machines from different manufacturers and with different electronics and an operator interface directly integrated on the machines.

Die MARES 4.0+-Plattform ist die neue, exklusive IT-Plattform für Industrie 4.0. Ausgearbeitet und entwickelt durch einen Maschinenhersteller mit über 50 Jahren Erfahrung im Betrieb und Management der Maschinenintegration, ist MARES 4.0 + die einzige Plattform, mit welcher Maschinen verschiedener Hersteller und mit verschiedenen Elektroniken vernetzt werden können und eine maschinenintegrierte Bedienoberfläche ermöglicht wird.



La Piattaforma MARES 4.0+ è la nuova esclusiva piattaforma informatica per Industria 4.0 studiata e messa a punto da chi produce, utilizza e gestisce l'integrazione delle macchine da oltre 50 anni. MARES 4.0 + è l'unica piattaforma che consente di interconnettere le macchine di produttori differenti e con elettroniche differenti e di avere un'interfaccia operatore direttamente integrata sulle macchine.

La plate-forme MARES 4.0+ est la nouvelle plate-forme informatique exclusive pour l'industrie 4.0 conçue et développée par ceux qui produisent, utilisent et gèrent l'intégration de machines depuis plus de 50 ans. MARES 4.0 + est la seule plate-forme qui vous permet d'interconnecter des machines de différents fabricants et avec différentes électroniques et de disposer d'une interface opérateur directement intégrée aux machines.





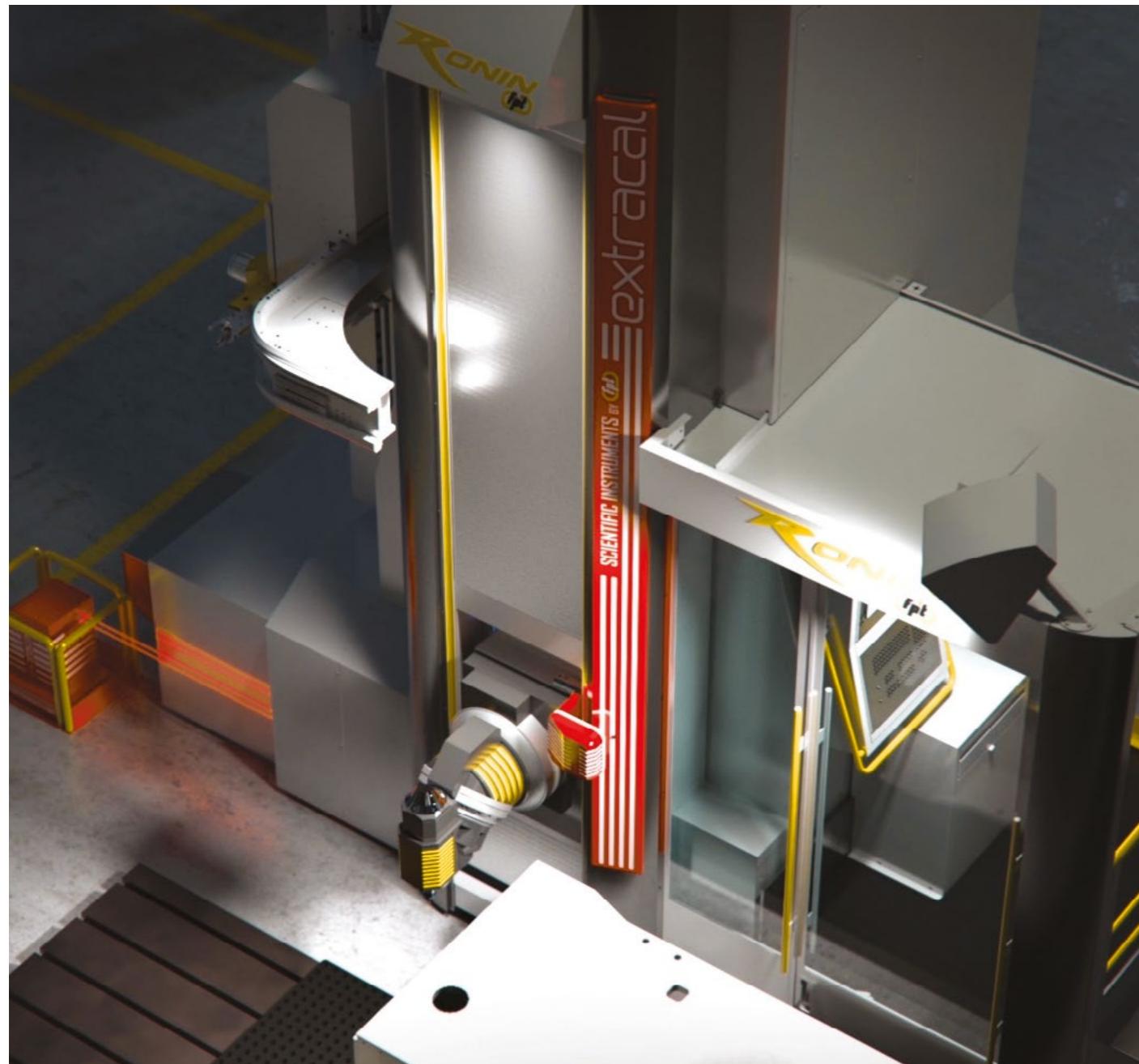
# EXTRACAL INNOVATIVE MEASURING SYSTEM



FPT INDUSTRIE S.P.A. SOFTWARE  
MANAGING THE CALIBRATION, THE  
MACHINING WITH COMPENSATION AND  
THE MEASURE OF THE WORKPIECE



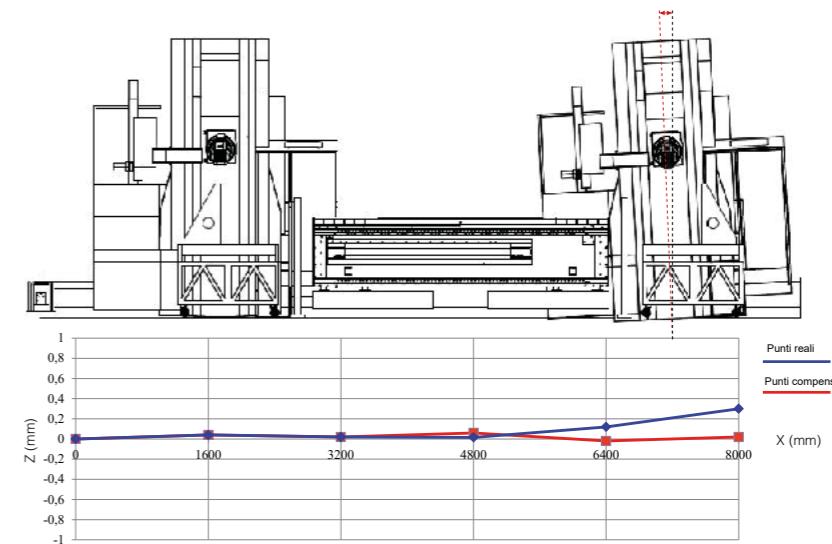
# EXTRACAL INNOVATIVE MEASURING SYSTEM



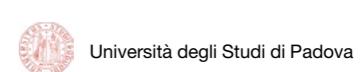
Extracal is an innovative measuring system, that operates in real time and measures the position of the working axes independently from the structural strains and/or bending stress of the machine. For the first time a milling or boring machine is able to certify the machined workpiece measurement with the same accuracy of a 3D measuring machine, saving lots of time and huge costs of machined workpiece movement, particularly if they are of big-sized dimensions. It allows to introduce suitable corrections to the machine tool so that to automatically restore the machine axis calibration, without any additional device and granting the accuracy.

Extracal ist ein innovatives System zur Echtzeit-Messung der Achsposition und dies unabhängig von strukturellen und/oder Biegeverformungen. Erstmals ist ein Frä- oder Bohrwerk in der Lage, die Messungen der bearbeiteten Werkstücke zu zertifizieren, und zwar mit gleicher Präzision wie eine 3D-Messmaschine. So können enorm viel Zeit und Kosten der Umlagerung eingespart werden, hauptsächlich bei großen Teilen. Das System ermöglicht, Korrekturen an der Werkzeugmaschine und somit die Kalibrierung der Maschinenachsen erneut vorzunehmen, dies ohne auf externe Geräte zurückgreifen zu müssen und dabei die Präzision zu garantieren.

## THE WORLDWIDE REVOLUTION IN THE HISTORY OF MACHINE TOOLS



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INNOVATIVE SOLUTIONS FOR  
FAST CLAMPING AND  
POSITIONING SYSTEM

CLAMPING SOLUTIONS  
FOR CAD AND CAM



TECHNICAL  
SUPPORT

SINGLE MODULE  
 $\varnothing 49$  RANGE



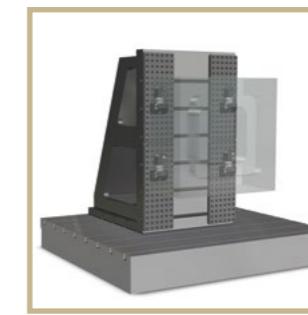
SMART CUBE

INNOVATIVE  
SOLUTIONS RANGE



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SOLUTIONS

TOMBSTONE AND  
ANGLE PLATE



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AT YOUR COMPANY



24 HOURS  
DELIVERY

TLTING MODULE  $\varnothing 90$



INTERNAL  
PRODUCTION



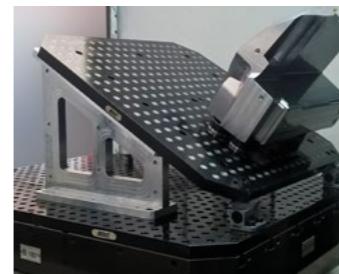
MODULES RANGE



RISER RANGE



THIRD CLAMPING POINT



TLTING RANGE



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