

HUFSCHMIED
ZERSpanungSSYSTEME

THE AVIATION EVENT

AT HUFSCHMIED

CU
COMPOSITES
UNITED

M·A·I
CARBON



DLR

bavAIRia

BZLI
Bundesverband der Deutschen
Luft- und Raumfahrtindustrie e.V.



PROGRAM

THE AVIATION EVENT 2025
WE UNITE WHAT BELONGS TOGETHER

GERMAN INNOVATION – ONE CUT AHEAD



EINEN SCHNITT VORAUS.
HUFSCHMIED
ONE CUT AHEAD.

HUFSCHMIED
ZERSpanungSSYSTEME GMBH

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HUFSCHMIED.NET 

A DAY FOR PROGRESS A DAY TO CELEBRATE.



→ About us

Christel
Hufschmied

Managing Director

A day for progress,

We would like to welcome you to our Aviation Event 2025. We are delighted that you have all accepted our invitation. We are excited to continue our tradition this year and host an insightful event for the machining industry.

Visit our exciting live demonstrations and experience progress and innovation up close at the machining centers. Seek the exchange with our experts. Our motivated team looks forward to hearing your thoughts, your visions and your expertise.

Innovation thrives on exchange! Innovation moves us forward together! Innovation shows us the future! With this unique outlook, we not only offer progress in machining, but also focus on its sustainability. The world of tomorrow belongs to our children and grandchildren. It is our responsibility to preserve it.

Our SonicShark® inline quality control system provides answers to many questions. It will accompany us throughout the day. Aviation Event 2025 is our day together. Let's shape and develop it together.

On behalf of my entire team, I would like to thank you from the bottom of my heart for your participation and loyalty and wish you an unforgettable day.

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AVIATION EVENT 2025

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WE CARE TODAY AND IN THE FUTURE.



ENVIRONMENT AND SUSTAINABILITY

RESOURCE CONSERVATION, CO2 EMISSIONS & ENERGY EFFICIENCY



Over 30 Years: Quality Meets Sustainability

As a modern company, Hufschmied has stood for the highest quality for more than three decades. We prove every day that quality and sustainability are not mutually exclusive. Our goal has always been – and continues to be – to develop tools that make production processes more efficient. Because that is exactly where the greatest leverage lies: conserving resources and creating a lasting positive impact on machining.

Sustainability Begins at the Source

Only those who know exactly where and how production takes place can ensure true sustainability. That's why Hufschmied has relied on Germany as a technology location since its founding. Even during procurement, we place the highest value on ensuring that our production operates in an environmentally responsible manner. Through continuous process monitoring, CO₂ emissions are regularly reviewed and optimized – a constant improvement process to achieve maximum environmental compatibility.

Climate Neutrality Can Only Be Achieved Together

A climate-neutral future is not the result of individual effort – it can only be achieved through collaboration. We are happy to support you on this journey. Together, we can make machining more sustainable, smarter, and more efficient.

TRADITION THAT CONNECTS.

33 YEARS HUFSCHMIED | SINCE APRIL 1, 1991



→ History



*The Hufschmied family
Victoria, Matthias
and Christel*

What began as a two-man industrial agency has developed over the years into one of the leading companies for Material-related machining solutions and is valued worldwide for its expertise, which is driven by the motivation and passion of each individual employee.

Our process consulting is unique. Our equipment enables us to recreate almost any scenario to ensure you always get the best possible advance. We don't just grind tools - we also refine them. Diamond is probably one of the most beautiful ways to refine precision tools. We have an extensive range of coatings in our own coating center.

Your trust has allowed us to grow to 140 employees. Our company is multicultural. For us, responsibility also means passing on knowledge. As a result, 67 apprenticeships have already been created.

OUR COMMITMENT TO THE HIGHEST STANDARDS

QUALITY AWARENESS AS A GUIDING PRINCIPLE



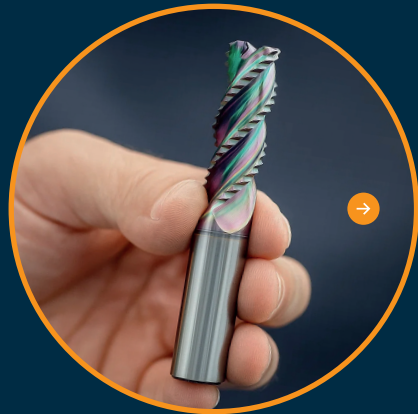
- ISO 9001:2015
- ISO 14001
- Calibrated testing and measuring devices
- Measurement protocols, first sample inspection procedures, fault management, employee training and more
- Gauge block marking of diameter and corner radius
- QR code marking of tools - digital twin with manufacturing and application information

WHERE MACHINING BEGINS HUFSCHMIED THINKS AHEAD

NEW TOOLS. NEW POSSIBILITIES.

WOLVERINE HC403BDSR

The tool was developed for high-performance machining of aluminum. Polished flutes and the ALX1 coating prevent material adhesion and reduce power consumption compared to smooth-cutting tools. Chip breakers produce short, well-controlled chips that are efficiently evacuated by the central internal cooling system. The face geometry enables high ramping angles while ensuring a high level of process reliability.



HEXA CUT® 058ECO

The new geometry significantly reduces vibration in large components and lowers internal stresses. In combination with copper mesh and composite materials, it greatly improves edge stability. The new DIP6p diamond coating also ensures maximum tool life – even when machining demanding high-temperature CFK duroplastic and thermoplastic matrix systems used in aerospace-grade fiber materials.



PERFECT NETWORKING

STRENGTH COMES FROM CONNECTION



HERE WE ARE NEXT

FAIRS & WORKSHOPS 2025

09. - 11.09.2025

CAMX - Orlando, USA

17. - 18.09.2025

JEC Forum - Krakow, Poland

22. - 26.09.2025

EMO World Trade Fair - Hanover, Germany

01.10.2025

Bipolar Plate Workshop - Oberkochen (hosted by Zeiss), Germany

07. - 10.10.2025

MSV International Engineering Fair - Brno, Czech Republic

08. - 15.10.2025

K Trade Fair - Düsseldorf, Germany

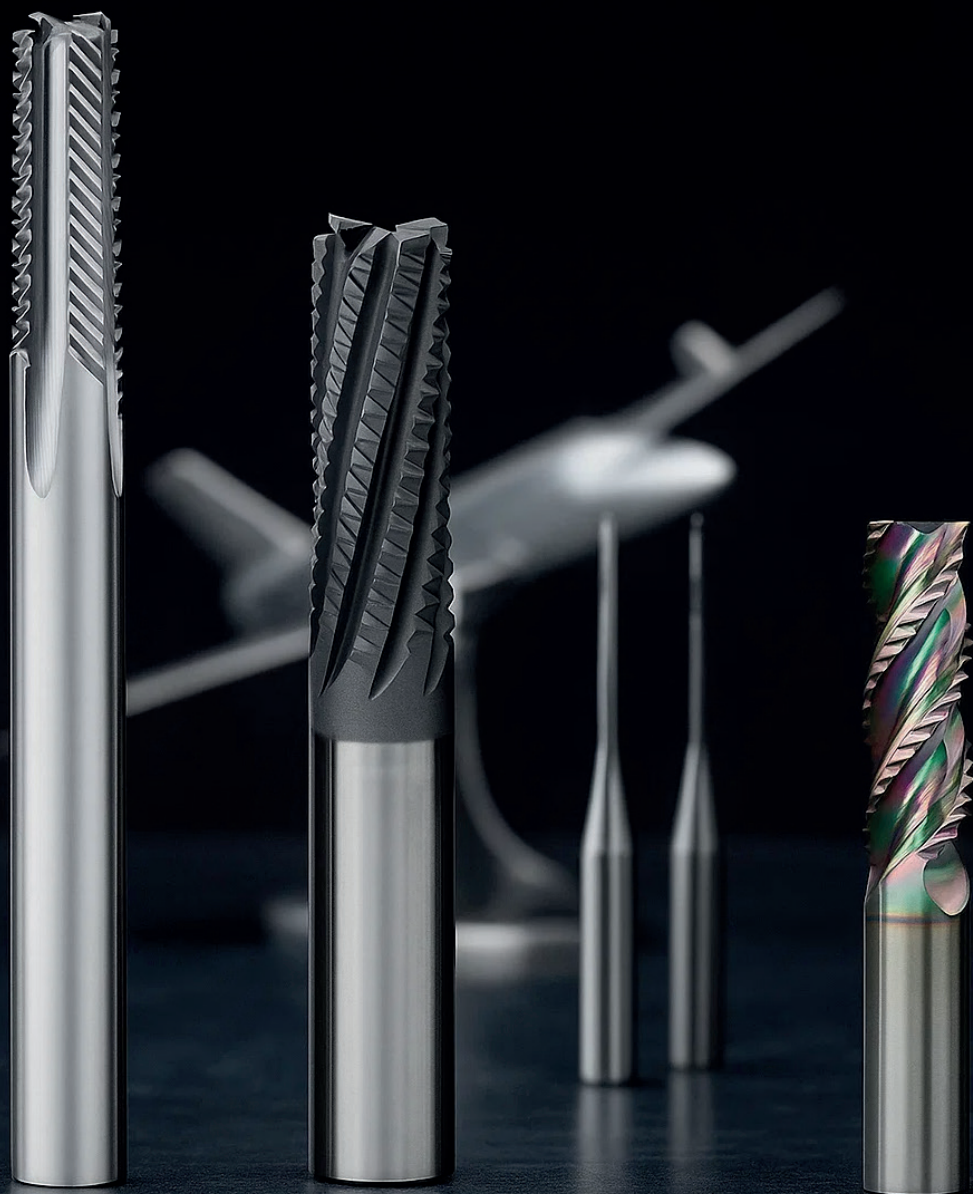
21. - 22.10.2025

JEC Forum DACH - Dresden, Germany

13. - 15.11.2025

Moldplas - Batalha, Portugal

HUFSCHMIED
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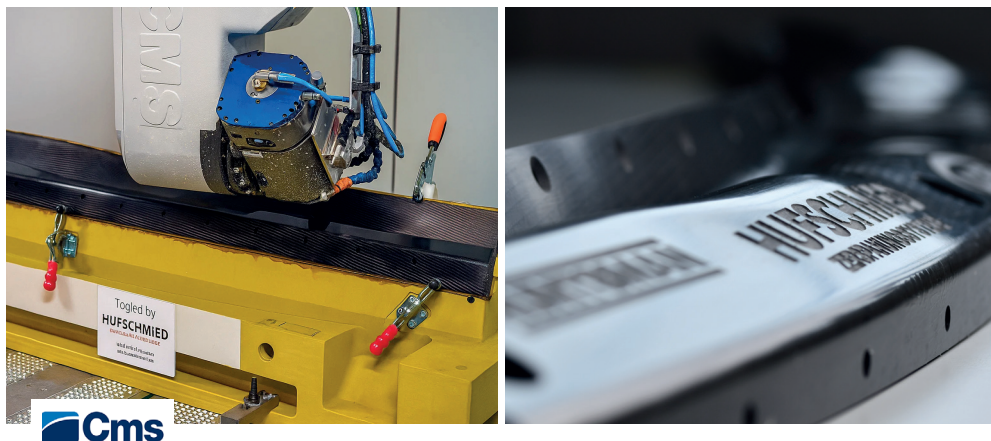


PROGRAM
AVIATION EVENT
2025



CFRP STRUCTURAL COMPONENT

DOOR EDGE MEMBER



MACHINING CENTER: CMS

TOOLS:

FB174A088100-DIP
Drill



FB174A070140-DIP
Drill + Countersinking Tool



058ECO080-DIP7
HEXA CUT®



CFRP STRUCTURAL COMPONENT

DOOR EDGE MEMBER

ADVANTAGES:

058ECO/068ECO: ALL-ROUND TOOL FOR FRP

- 3 versions: pushing, pulling, straight
- Diamond-coated Dip7P: very high hardness and very smooth surfaces (in-house development)
- Unequal tooth pitch: Z7 or Z9 depending on the material
- High running smoothness even with unstable clamping
- Long tool life

FB172/FB174: WITH AND WITHOUT CHAMFER

- Tool available with Z2 and Z4
- Chip breakers on the main cutting edges
- High running smoothness, even with unstable clamping
- Long tool life
- No delamination on the exit side
- Diamond coating Dip3S (very smooth layer, ideal for drilling)

MATERIAL:

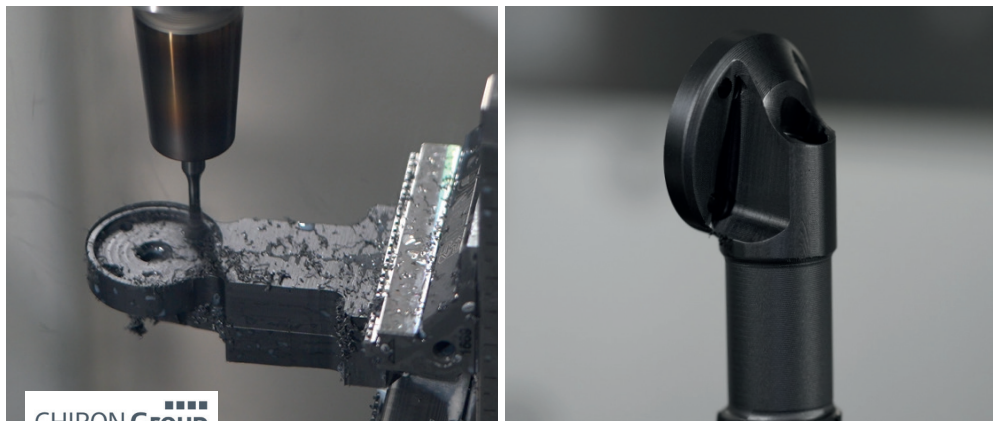
CFRP

APPLICATION DATA:

Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Drilling Ø 8,8mm	FB174A088100-DIP	1600	320	-	-
Ø 7 Hole with Countersink	FB174A070140-DIP	2000	320	-	-
Milling pockets	058ECO080-DIP7	10.000	3.000	3,6	10
Trimming	058ECO080-DIP7	10.000	3.000	8	10

PEEK CF

MOTOR MOUNT FOR HZ700 DRONE



CHIRON Group

MACHINING CENTER:
CHIRON FZ12 S FIVE AXIS

TOOLS:

058ECOL080-DIP7
HEXA CUT®



394GR04-50-DIP
GRAFTOR®



394GRK03-20-DIP
GRAFTOR®



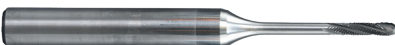
FB162HA040
CFRP DRILL



394GR04R-DIP
GRAFTOR®



394GR02R-DIP
GRAFTOR®



Programmed with:

Mastercam

Supported by:

robotized

PEEK CF

MOTOR MOUNT FOR HZ700 DRONE

ADVANTAGES:

- Reduction of machining time by up to 30%
- High process reliability
- Excellent surface quality
- Maximum tool life – even at very high feed rates
- Air-cooled milling enables minimal use of coolant/lubricant

! Latest Generation of Our DIP Coating

MATERIAL:

Solid Material PEEK + CF30

APPLICATION DATA (FIRST SETUP):

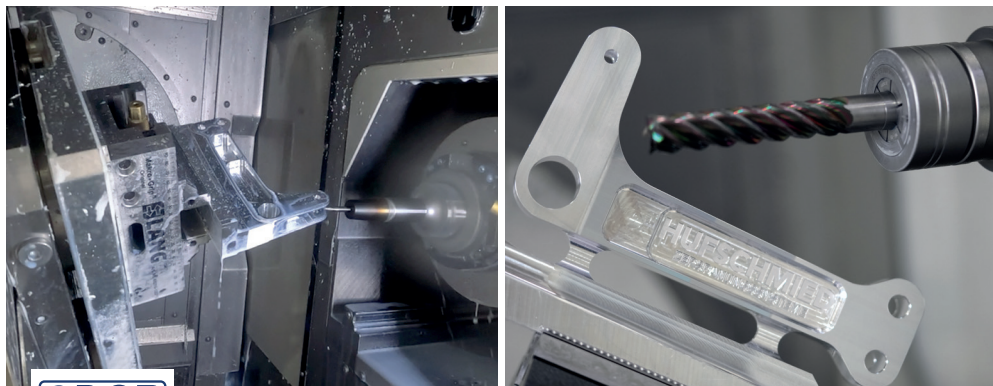
Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Roughing	058ECOL080-DIP7	7200	4000	1	12
2.5D Finishing Head	394GR04-50-DIP	10000	2000	2	0,2
Circular Pocket + Slot	394GRK03-20-DIP	12000	1600	0,6	1
Ø4 Drilling	FB162HA040	4500	400	-	4
3D Semi-Finishing	394GR04R-DIP	12000	2800	0,8	0,5
3D Finishing	394GR04R-DIP	12000	2800	0,2	0,2
3D Rest Material Machining	394GR02R-DIP	16000	2000	0,12	0,12

APPLICATION DATA (SECOND SETUP):

Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Plan Finishing + Ø16	058ECOL080-DIP7	10000	3000	0,3	2
3D Finishing	394GR02R-DIP	16000	2000	0,12	0,12
Slot Contour Milling	394GR03-20-DIP	20000	1600	3	1
Helical Milling of a Core	394GR02R-DIP	24000	2800	1	0,3

ALUMINUM 7075

AIRCRAFT-BRACKET



MACHINING CENTER:

GROB

TOOLS:

HC403BDS160-S024-ALX1
WOLVERINE®



105VS120120-090
Chamfer Mill



HC403BDS100-S015-ALX1
WOLVERINE®



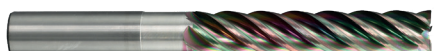
HC403BDSRL160-1KZ
WOLVERINE®



HC405BDS100-S1-ALX1
WOLVERINE®



HC405BDS160-S2-ALX1
WOLVERINE®



HC452060-ALX1
WOLVERINE®



Programmed with:

hyperMILL®

Supported by:

OPEN MIND
THE CAM FORCE

ALUMINUM 7075

AIRCRAFT-BRACKET

ADVANTAGES:

- Polished chip spaces and the new ALX1 cutting material minimize adhesion
- Roughing profile reduces cutting forces and lowers power consumption during machining
- Special geometry enables a high material removal rate
- Small, well-controlled chips
- Central internal cooling ensures optimal chip evacuation
- Stable cutting edge due to corner radius
- Special face geometry allows for large ramping angles during plunge milling

MATERIAL:

Aluminum 7075

APPLICATION DATA:

Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Roughing	HC403BDSRL160-ALX1	26000	16000	5,3	40
Roughing	HC403BDSR120-1KZ-ALX1	26000	8000	3	35
Roughing	HC403BDS080-S009	16000	5000	2,4	0,6
Finishing	HC403BDS120-S006	20000	4500	0,2	40
Finishing	HC405S160-S002-ALX1	20000	4500	0,1	80
Finishing	HC403BDS100-S016-ALX1	12700	2800	0,2	15
Finishing	HC405BDS100-ALX1	20000	3800	0,05	50
Finishing	HC452A080	17500	4500	0,6	0,6
Finishing	HC403BDS120-20-S001	22000	4500	0,2	25
Chamfer	105VS120120-090	14000	3000	0,5	0,5
Chamfer	HC452AFS040-ALX1	20000	2000	0,15	0,15

CMC

TURBINE BLADE



MACHINING CENTER: RÖDERS

TOOLS:

PKD101GS080-067-S001
PCD Milling Cutter



P100RGECO08-108
PCD Ball End Mill



P100RG060-106
PCD Ball End Mill



CVD150S020060-2-S001
CVD Ball End Mill



CMC

TURBINE BLADE

ADVANTAGES:

- ➔ Maximized tool life thanks to ultra-hard PCD and CBN cutting edges
- ➔ Consistent cutting quality over long machining cycles
- ➔ Thermally stable machining due to minimal friction
- ➔ High process reliability – even in interrupted cuts
- ➔ Optimized cutting edge geometry tailored to CMC-specific material properties
- ➔ High dimensional accuracy during dry machining
- ➔ Scalability for automated series production
- ➔ Defined cutting edge geometry for controlled material removal

By strategically using PCD and CBN tools combined with an optimized machining strategy, we unite precision, process reliability, and efficiency – even when working with the most demanding materials.

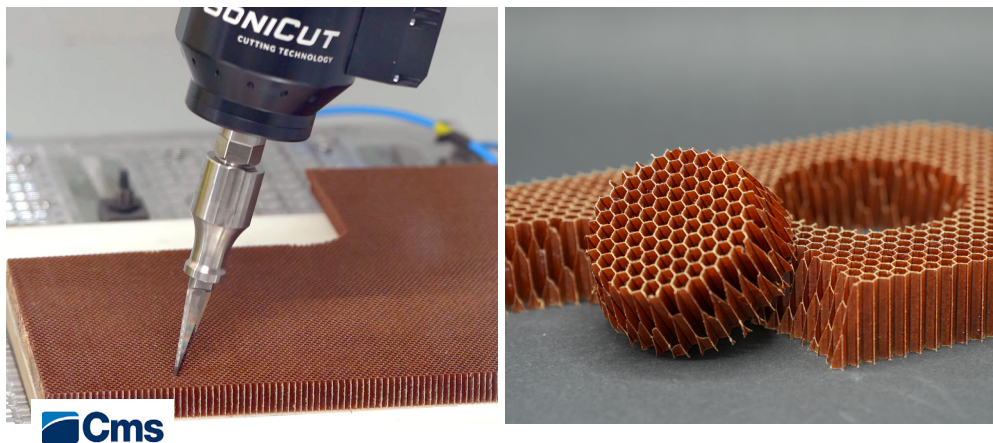
MATERIAL: C/C-SiC

APPLICATION DATA:

Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Roughing	PKD101GS080-067-S001	13.000	3.000	0,6	6
Semi-Finishing	P100RGECO08-108	12.000	2.400	0,5	0,5
Finishing (Flat Surface + Bottom)	P100RG060-106	16.000	3.000	0,15	0,15
Rest Finishing (Radius)	CVD150S020060-2-S001	22.000	3.000	0,08	0,08

HONEYCOMBS

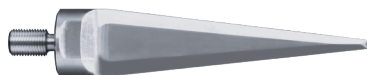
MACHINING WITH THE BLADE


Cms

MACHINING CENTER: CMS ARES

TOOLS:

WHK2.77.001-G2
VHM-Ultraschall-
schneidklinge



EFFICIENT CUTTING

of a Wide Range of Materials, such as:

- Honeycombs (Nomex/aluminum)
- Textile materials
- Cork
- Fibers (e.g. carbon fiber, glass fiber)
- Uncured prepregs
- Foams
- And more

HONEYCOMBS

MACHINING WITH THE BLADE

TECHNICAL ADVANTAGES

Hufschmied Blades + Sonicut Ultrasonic System:

- Monoblock blade milled from solid material
- No material mix – solid carbide only
- No damping or energy loss from soldered joints
- Blade geometry can be customized to the customer's application
- Amplitudes in the range of 30 - 40 µm possible
- System can be adapted to existing equipment

ADVANTAGES IN APPLICATION

- Maximum cutting performance
- Capable of large cutting depths
- Excellent surface quality on cut edges
- High machining speed

MATERIAL:

Nomex-Wabe

APPLICATION DATA:

Process	Tool	Rotational speed rpm	Feed rate mm/min	ae mm	ap mm
Schneiden	WHK2.77.001-G2	-	3.000	-	-

QR-CODE

COMPLETE TRACEABILITY



ADVANTAGES:

- ➔ Through dialog with our customers, we have identified the machining requirements for increasingly precise Industry 4.0 processes. Our tools have individual QR codes that act as digital twins and enable complete traceability from the packaged tool to the raw material. This unique fingerprint optimizes automated workflows.

The QR codes enable the tool history to be tracked via a mobile app and document production data and processes such as milling tests. This transparency turns the tools into genuine Industry 4.0 tools. Digital twin technology optimizes manufacturing by giving precision components a traceable, data-rich identity for monitoring and process optimization.



Raw material

Date
30.11.2021 10:57:41

Document no.
WE211130009

Supplier batch
HM-AMLG02042

Internal material designation
038

Material description
Supplier
AF805

Carbide delivery NT
AXISMATERIAL LTD

Production planning

Date
02.10.2022 09:07:22

Item number
394GRL06R-HR

FA number
FA221002006

FE no.
FE221002006

Batch-Number
H224901

QR code lasering

Laser date
06.11.2022 07:47:36

Length [mm]
75,5

Diameter [mm]
5,9948

Zoller measurement HWT

Measurement date
16.01.2024 10:50:13

Item number
394GRL06R-HR

Measurement result
OK

Machine

Batch
H240301/O38

FE number

Zoller measurement BSZ

Date

Item number

Measurement result

FA number

Batch

smapOne

smapOne



CLEAR VIEW FAST SOLUTIONS

Your expert for advanced image processing solutions in quality inspection, measurement, detection, and robotics.

YOUR ADVANTAGES

- + No programming skills required
- + Seamless integration into existing systems, e.g. with integrated OPC UA, Modbus, MQTT interfaces, and more.
- + Flexibility and adaptability to diverse requirements
- + Objective, standardized quality control
- + Time savings thanks to fast and reliable results within seconds
- + Increased safety through process documentation – for example, by automatically saving images of component quality to your cloud.
- + Expert support and continuous development

WHAT WE OFFER:

- + Complex Character Recognition
- + Precise Component Identification
- + AI-Based Visual Quality Control
- + Precision Measurement Using Laser Technology
- + Your Partner for Process Automation



1

Systematic development of more efficient, cost-effective production processes for market-leading international customers

2

Development of predictive maintenance as a pioneer for improved supply chains

3

Intelligent connectivity - from the machine to the tool

4

Inline quality control can save a minimum of 80% of quality assurance costs

5

Visualization of machine data in real time

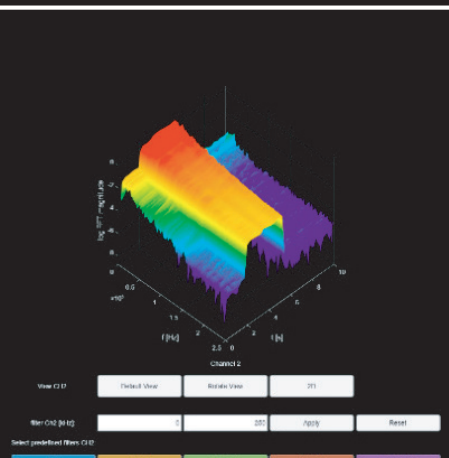
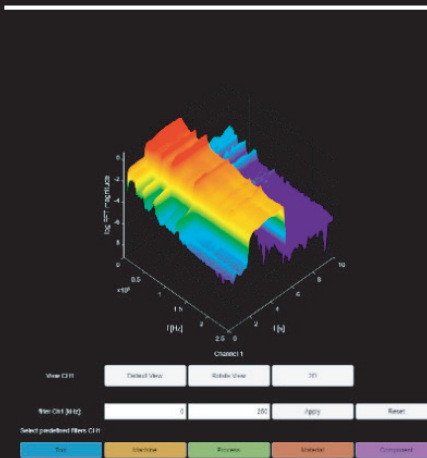
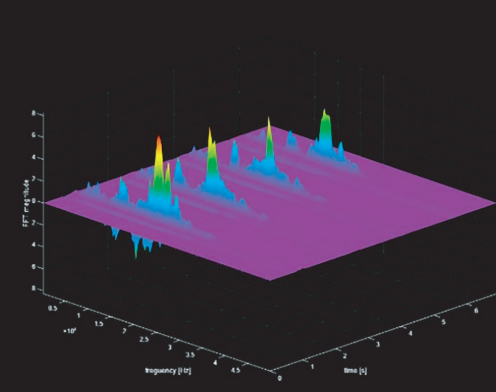
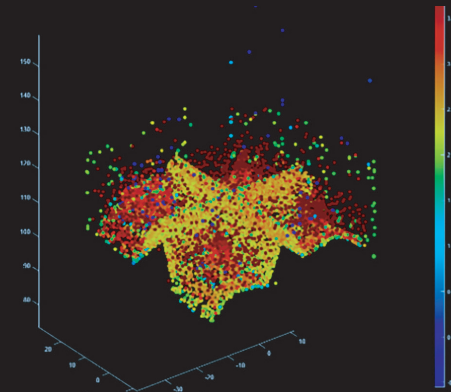
6

By using structure-borne sound data, it is possible to detect when a tool penetrates a material

SONICSHARK® QUALITY CONTROL IN EVERY SITUATION

AVERAGE COST SAVINGS OF 15%
IN ALL AREAS

Thanks to extensive connectivity and the use of all measured and characteristic values across company boundaries, high savings can be achieved in all areas.





HUFSCHMIED ZERSpanungSSYSTEME GMBH

Edisonstraße 11 d

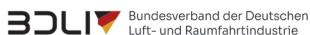
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BY *Ralph Hufschmied*



Bundesverband der Deutschen
Luft- und Raumfahrtindustrie



CAD/CAM MES
Software & Services