

Academy training

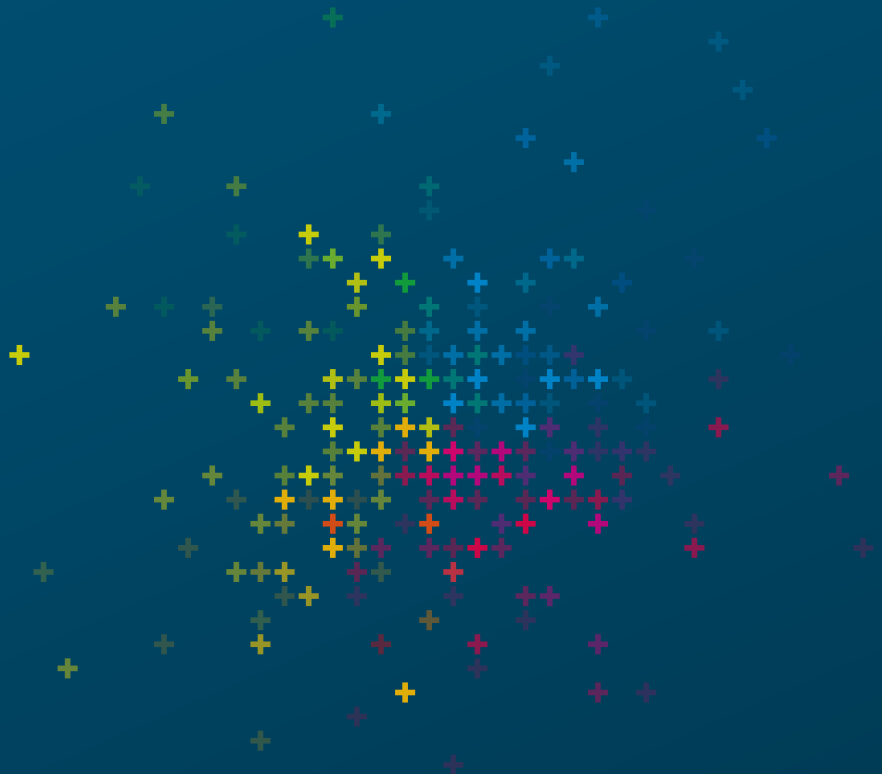
EDM Die sinking



Passion for Precision

GF Machining Solutions: all about you

When all you need is everything, it's good to know that there is one company that you can count on to deliver complete solutions and services. From world-class electrical discharge machines (EDM), Laser texturing and Additive Manufacturing through to first-class Milling and Spindles, Tooling, Automation and software systems — all backed by unrivalled customer service and support — we, through our AgieCharmilles, Microlution, Mikron Mill, Liechti, Step-Tec and System 3R technologies, help you raise your game and increase your competitive edge.



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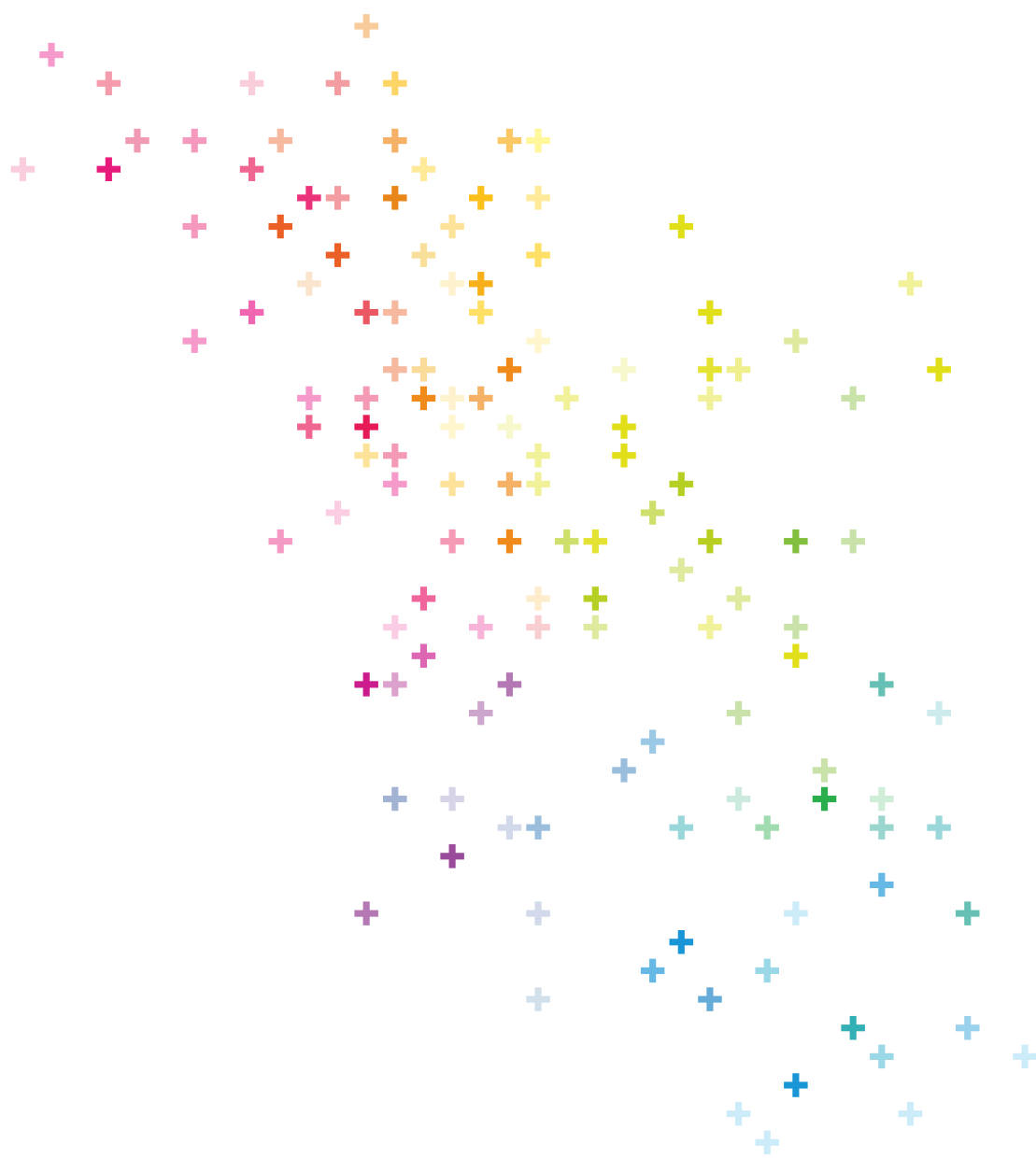
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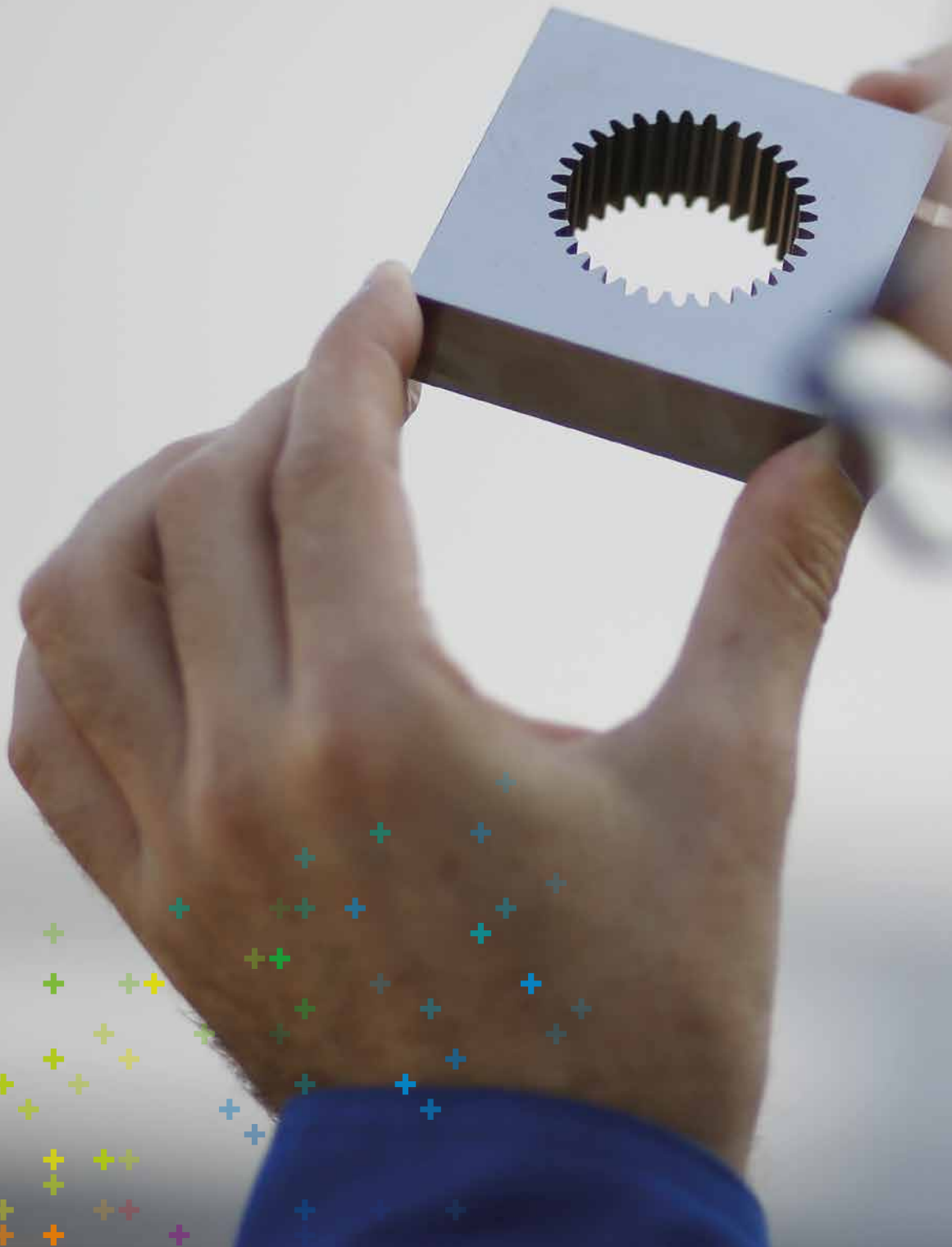
Learn to operate

We provide you with indepth training to share with you the basic knowledge to use your new machine autonomously/independently.



EDM

+ EDM-Die Sinking Basic training



Learn to operate training

EDM–Die Sinking Basic training

article n°200010301 (at GF site)

article n°200010302 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
3 days	4	Beginner	Basic mechanical skills	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Learn the main functionalities to achieve top Die Sinking performance

What are the course contents?

- + Understanding the EDM process
- + Mastering the HMI:
- + Navigating through the different screens
- + Machine language
- + Learning how to write a machining program
- + Optimum machine settings method
- + Preparing the machine and its environment
- + Temperature control and dielectric quality
- + Verification of control points
- + References and position of workpieces
- + Learning and using machining parameters
- + Machine maintenance

What is the course objective?

- + In this course, participants learn how to make their first workpieces on a die-sinking EDM machine and work unassisted.

What are the course benefits?

- + Learn the main functionalities to perform with the Die Sinking technology

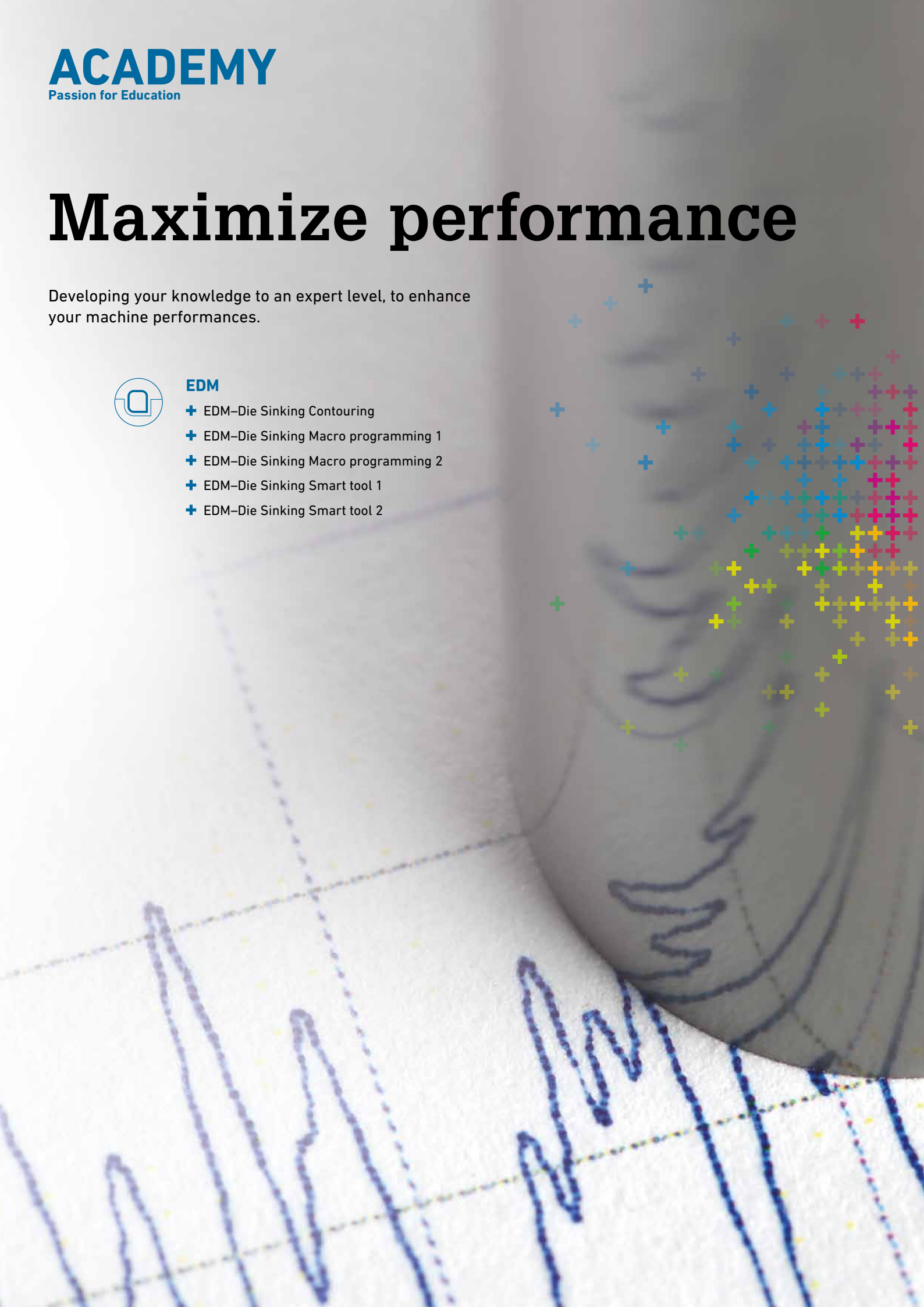
Maximize performance

Developing your knowledge to an expert level, to enhance your machine performances.



EDM

- + EDM-Die Sinking Contouring
- + EDM-Die Sinking Macro programming 1
- + EDM-Die Sinking Macro programming 2
- + EDM-Die Sinking Smart tool 1
- + EDM-Die Sinking Smart tool 2



Maximize performance training

EDM–Die Sinking Contouring

article n°200010601 (at GF site)

article n°200010602 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
2 days	4	Intermediate	EDM–Die Sinking Basic training	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Maximize performance with EDM Die-sinking contouring process

What are the course contents?

- + Explanation of the contouring process
- + Introduction to contouring programming language
- + Configuration of the machine
- + Selection of type of electrode according to workpiece
- + Alignment of electrodes
- + Creation of a complete example
- + Creation of contouring entry and exit points
- + Simulation of programs before machining

What is the course objective?

- + In this course, participants learn how to make complex contours inside workpieces.

What are the course benefits?

- + Autonomously program contouring cycles and benefit from practical application of skills acquired in simulations.

Maximize performance training

EDM–Die Sinking Macro programming 1

article n°200010605 (at GF site)

article n°200010606 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
2 days	4	Intermediate	EDM–Die Sinking Basic training	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Increase your productivity for repeatable parts with Macro programming

What are the course contents?

- + Presentation of objectives of macros
- + Introduction to programming language
- + Automation of repetitive measurements of workpieces and electrodes

What is the course objective?

- + In this course, participants learn how to write basic Automation programs for repetitive tasks.

What are the course benefits?

- + Gain time and secure your measurement processes in repetitive tasks.

Maximize performance training

EDM–Die Sinking Macro programming 2

article n°200010607 (at GF site)

article n°200010608 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
2 days	4	Intermediate	EDM–Die Sinking Basic training Macro programming 1	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Save time and increase precision for repeatable parts with Macro programming

What are the course contents?

- + Creation of an automatic complex measurement cycle such as a punch
- + Automation of geometric correction directly in machining program

What is the course objective?

- + In this course, participants learn how to write an advanced measurement program and how to automate geometric correction of cavities.

What are the course benefits?

- + Gain time and secure your measurement processes in repetitive tasks. Benefit from practical application of skills acquired in simulations.

Maximize performance training

EDM–Die Sinking Smart tool 1

article n°200010609 (at GF site)

article n°200010610 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
1 day	4	Intermediate	EDM–Die Sinking Basic training	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Save cost in EDM Die sinking with tool compensation and wear partitioning from the Smart tool option

What are the course contents?

- + Presentation of objectives of Smart Tool modules (Compensation, Wear Partitioning, Life Tool and Declassing)
- + Application of geometric compensation program
- + Creation of a simple program with wear partitioning (distribution of electrode wear)

What is the course objective?

- + In this course, participants learn how to write a simple program to ensure precision of $\pm 5 \mu\text{m}$ in as many as five identical cavities.

What are the course benefits?

- + Save up to 30% in electrode consumption.

Maximize performance training

EDM–Die Sinking Smart tool 2

article n°200010611 (at GF site)

article n°200010612 (at customer site)



Die sinking

Duration	Number of participants	Experience level	Requirements	Machines
3 days	4	Intermediate	EDM–Die Sinking Basic training Smart tool 1	DRILL 20, FORM , FORM E, FORM P, FORM S, FORM X

Save cost in EDM Die sinking with life tool and declassing from the Smart tool option

What are the course contents?

- + Production of a complete program with target precision of $\pm 5 \mu\text{m}$
- + Analysis of results and implementation of automatic correction
- + Creation of an advanced program

What is the course objective?

- + In this course, participants learn how to write an advanced program to ensure precision of $\pm 5 \mu\text{m}$ in five or more identical cavities.

What are the course benefits?

- + Optimize the life span of your electrodes and reduce the number of electrodes you consume by more than 30%.

ACADEMY

GF Machining Solutions

Dedicated training

Customized training based on your specific needs to increase your knowledge and machine performance.



Training for all level

Dedicated training

article n°200011001 (at GF site)

article n°200011002 (at customer site)



Duration	Number of participants	Experience level	Requirements	Machines
Based on your needs	Based on your needs	All levels	Based on your expectations	For all technologies

Realize the full potential of your machine with training customized to your needs

What are the course contents?

- + Adapted to your machine
- + Adapted to your operator's skill level
- + Adapted to your business needs

What is the course objective?

- + Provide your operators with the key knowledge to achieve your business objectives.

What are the course benefits?

- + Acquire the knowledge essential to successful machining.

About GF Machining Solutions

Multi-technology solutions provider

Our commitment to you and your specific applications is proven by the value-adding intelligence, productivity and quality delivered by our multi-technology solutions. Your success is our chief motivator. That's why we are continuously advancing our legendary technical expertise. Wherever you are, whatever your market segment and whatever the size of your operation, we have the complete solutions and the customer-centric commitment to accelerate your success—today.

EDM (Electrical Discharge Machining)



Wire-cutting EDM

GF Machining Solutions' wire-cutting EDM is fast, precise and increasingly energy efficient. From ultraprecise machining of miniaturized components down to 0.02 mm to powerful solutions for demanding high-speed machining with respect to surface accuracy, our wire EDM solutions position you for success.

Die-sinking EDM

GF Machining Solutions is revolutionizing die-sinking EDM with features like iGAP technology to dramatically boost machining speed and reduce electrode wear. All of our die-sinking systems offer fast removal and deliver mirror finishes of Ra 0.1 µm (4 µin).

Hole-drilling EDM

GF Machining Solutions' robust hole-drilling EDM solutions enable you to drill holes in electrically conductive materials at a very high speed—and, with a five-axis configuration, at any angle on a workpiece with an inclined surface.

Milling



Milling

Precision tool and mold manufacturers enjoy a competitive edge with our Mikron MILL S solutions' fast and precise machining. The Mikron MILL P machines achieve above-average productivity thanks to their high performance and Automation. Customers seeking fastest return on investment benefit from the affordable efficiency of our MILL E solutions.

High Performance Airfoil Machining

Our Liechti turnkey solutions enable the highly dynamic manufacturing of precision airfoils. Thanks to the unique performance and our expertise in airfoil machining, you increase productivity by producing at the lowest cost per part.

Spindles

As part of GF Machining Solutions, Step-Tec is engaged in the very first stage of each machining center development project. Compact design combined with excellent thermal and geometric repeatability ensure the perfect integration of this core component into the machine tool.

Advanced manufacturing



Laser texturing

Aesthetic and functional texturing is easy and infinitely repeatable with our digitized Laser technology. Even complex 3D geometries, including precision parts, are textured, engraved, microstructured, marked and labeled.

Laser micromachining

GF Machining Solutions offers the industry's most complete line of Laser micromachining platforms optimized for small, high-precision features to meet the increasing need for smaller, smarter parts to support today's leading-edge products.

Laser Additive Manufacturing (AM)

GF Machining Solutions and 3D Systems, a leading global provider of additive manufacturing solutions and the pioneer of 3D printing, have partnered to introduce new metal 3D printing solutions that enable manufacturers to produce complex metal parts more efficiently.

Tooling and Automation



Tooling

Our customers experience complete autonomy while maintaining extreme accuracy, thanks to our highly accurate System 3R reference systems for holding and positioning electrodes and work pieces. All types of machines can easily be linked, which reduces set-up times and enables a seamless transfer of workpieces between different operations.

Automation

Together with System 3R, we also provide scalable and cost-effective Automation solutions for simple, single machine cells or complex, multi-process cells, tailored to your needs.

Software



Digitalization solutions

To drive its digital transformation, GF Machining Solutions acquired symmedia GmbH, a company specialized in software for machine connectivity. Together, we offer a complete range of Industry 4.0 solutions across all industries. The future requires the ability to adapt quickly to continual digital processes. Our intelligent manufacturing offers embedded expertise, optimized production processes, and workshop Automation: solutions for smart and connected machines.

Customer Services



Worldwide for you

Ensuring the best performance throughout the lifetime of our customers' equipment is the goal of our three levels of support. Operations Support offers the complete range of original wear parts and certified consumables. Machine Support includes spare parts, technical support, and a range of preventive services to maximize machine uptime. Business Support offers customer-specific business solutions.



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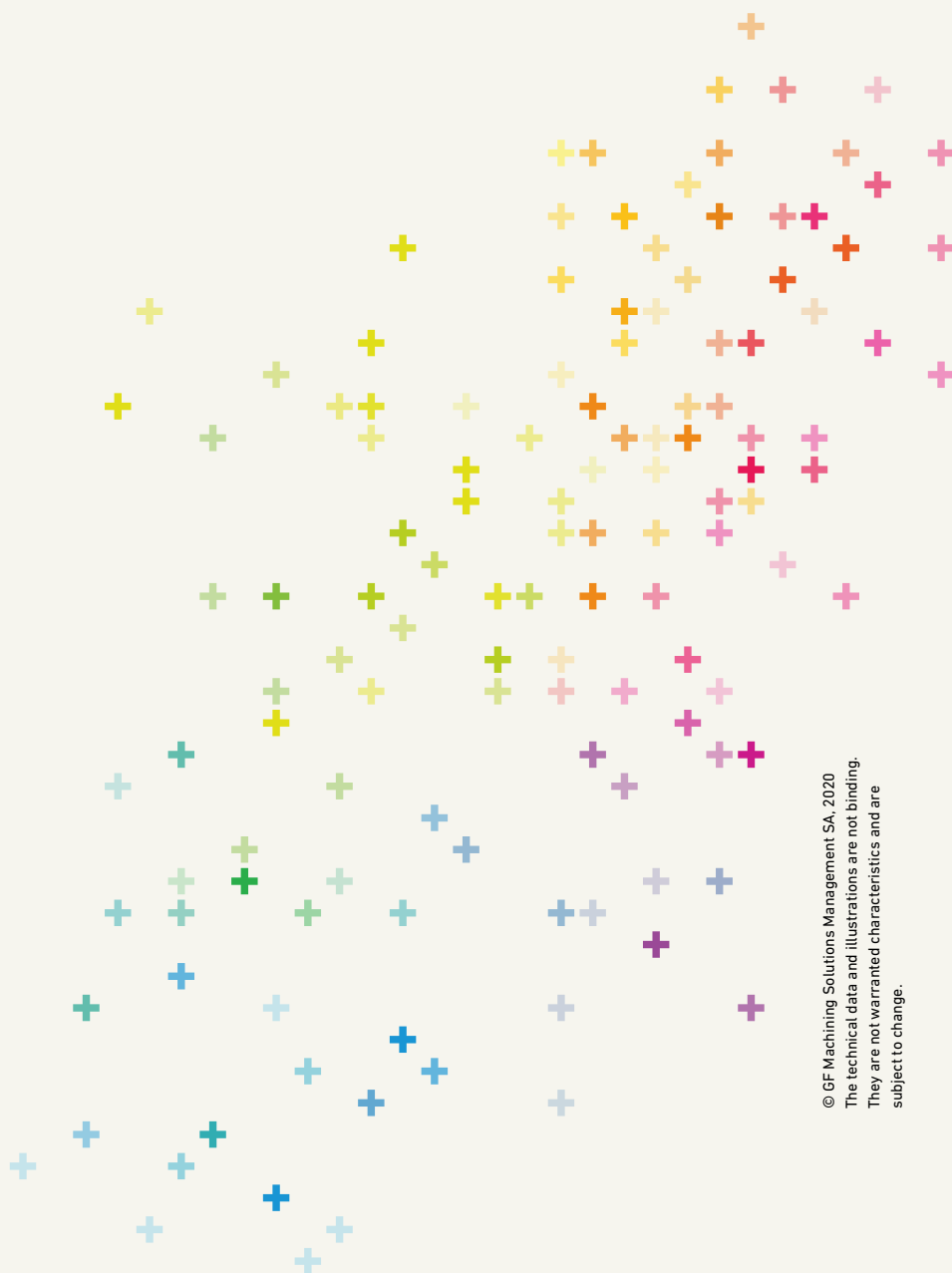
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At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser, Additive Manufacturing, Spindle, Tooling and Automation solutions. A comprehensive package of Customer Services completes our proposition.

www.gfms.com



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