

MAGAZINE

by **ONA**

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EDM advantages over milling in gas turbine housing production.

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Solutions to clients specifications. We are your solution anywhere, anytime.

ADDITIVE MANUFACTURING · 36

The exciting new form of manufacturing that is destined to transform the industrial sector.

A LOOK TO THE PAST · 46

1960-1989. ONA EDM's commitment to innovation and design make it a major player in the industry.



+ 65 YEARS
OF EDM

AUTOMATED AND
CUSTOMISED
SOLUTIONS



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TECHNOLOGICAL KNOWLEDGE

TECHNOLOGICAL KNOWLEDGE AND CUSTOMERS' TRUST



JAVIER GONZÁLEZ BARAJAS
CEO

AUTOMATED EDM.

EDM technology has become our true passion. For over 65 years we have been designing and developing manufacturing solutions, getting a deep understanding of the EDM process while building a strong relationship of trust with our customers. Cutting edge EDM knowledge and customer's trust have been the key points of our commitment to reach the status of technological partner for many of our customers.

In this issue of the magazine, we want to showcase some of our latest challenging projects, developed in collaboration with companies that have placed their trust in us. They are examples of how EDM technology can be the right manufacturing alternative when our customers rely on our proved expertise and valuable experience.

Read on to learn more about our **manufacturing solutions**>>

for new applications in the aeronautical industry.

Our deep understanding of the production processes involved in the aeronautics sector is backed by more than 25 years working with leading manufacturers from the industry. Now, while high speed turbine components are setting new limits for the conventional manufacturing processes, we present our development in advanced EDM technology for maximum material removal rate in difficult to manufacture aerospace alloys. Our solution for cases applications integrates up to 800A, two collaborative heads and a special rotary table in a very compact machine design.

In recent years, we have detected an increasing demand for automation EDM projects. From already existing pre-packed solutions to the most complex turnkey projects, we know the technical difficulties of integrating the right systems and the need of a **total commitment from our side to every automation project**, in order to improve the customer business. One more time, it's a question of knowledge and

customer's trust.

In the age of digital transformation and the Industry 4.0 paradigm, automation is more than to join physical components. The **ONA Smart connect** platform is our proposal for offering digital services based on connected machines. Secure real time monitoring services are the underlying basis of a new generation of possibilities, ranging from teleservice assistance and advanced maintenance service to the traceability concept to improve the performance of the customer's EDM processes. ONA Smart Connect is part of our strategy of integral business support service. It enables us to work even more closely with our customers, offering them an immediate response. This commitment to proximity and the quality of our customer care service sets us apart from the competition.

Finally, a look to other manufacturing technologies with promising future. We are always open to new opportunities and partnership agreements with companies that share our innovative and customer-oriented philosophy.

+ 65 YEARS OF EDM

In this context, we are currently involved in introducing **microhole EDM** machines to Europe and we have also started to work in the area of **additive manufacturing** solutions, jointly setting up two companies that are developing different but complementary technologies: ADDILAN, specialized in the Wire Arc Additive Manufacturing (WAAM) technology and SAMYLABS in the Selective Laser Melting (SLM). We are aware that additive manufacturing technologies are changing the whole manufacturing industry, and we consider we have a great technological potential to be an active player in this challenging scenario.

We will continue working to gain the trust of our customers and to maintain our philosophy. As ONA's founders said in 1952, "Our passion is technology. Service is our vocation". More than 65 years later, our success is there for all to see.



ONA manufactures and develops all the technology in its facilities, that is why all the knowledge remains in ONA.

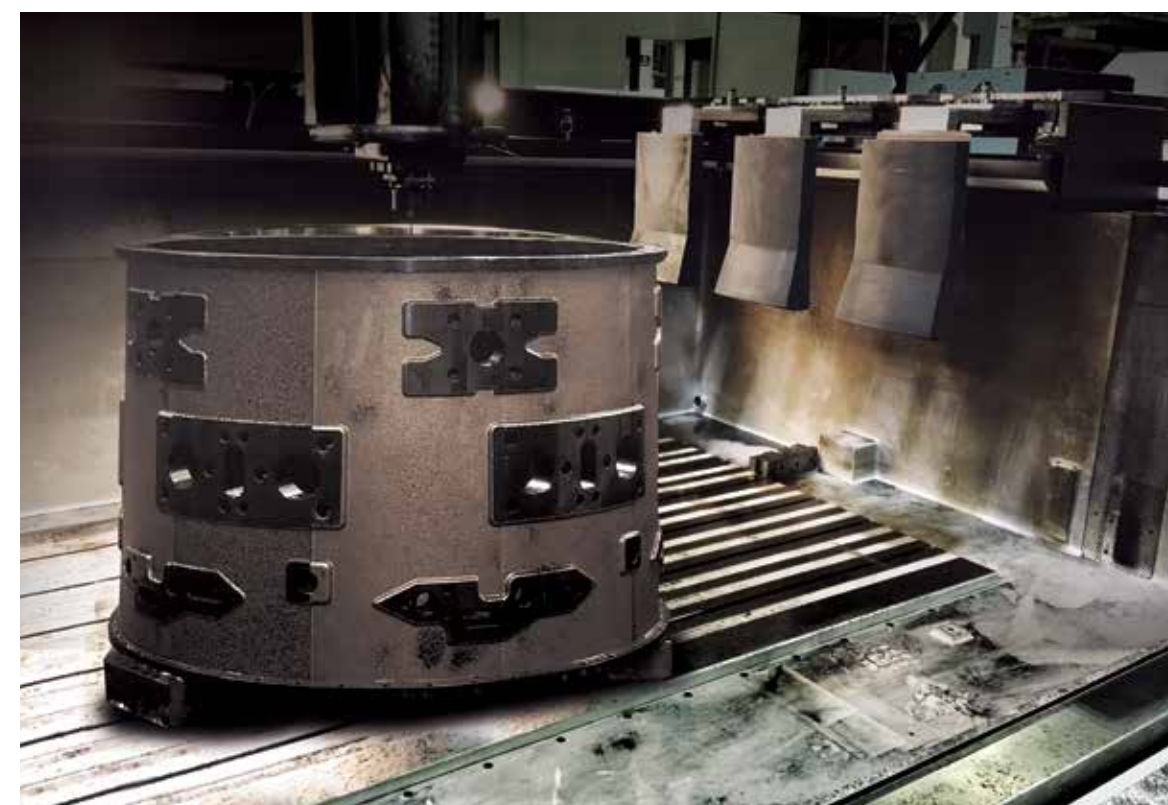
INNOVATION

EDM advantages over milling in GAS TURBINE HOUSINGS production

Thanks to ONA aeronautical companies AVIC Chengdu (China) and Paradigm Precision (USA) have recently discovered that they could produce this turbine component through electrical discharge machining under highly beneficial conditions for them

Initial investment in equipment is lower (up to 2 or 3 times), as well as consumables and non-quality costs

ONA's digital high removal rate generator can work at 400 A. a clear competitive advantage.



Constantly innovate in order to offer companies new tailor-made technological solutions in the field of electrical discharge machining that enable them to improve the efficiency of their processes and, in addition, increase their profitability. This is what has made ONA a leading company in the manufacture of highly reliable

and accurate EDM machines, with a presence in more than 60 countries all over the world.

With our help, two major aeronautical companies, AVIC Chengdu from China, and Paradigm Precision from the United States, have recently learnt

they could manufacture the gas turbine housings by means of die-sinking electrical discharge machining in conditions very beneficial for them. Instead of using milling for all the machining process, now roughing is done by EDM, while only finishing is by milling. >>

In fact, with our assistance, they came to the conclusion that the economic advantages offered by the use of ONA electrical discharge machining equipment with respect to milling were remarkable:



A less significant investment in industrial equipment; between 2 and 3 times lower.



Also, **lower consumable costs:** Up to 4 times less. While consumables in milling are high-cost tools, graphite electrodes used in electrical discharge machining are re-machined every few housings.



A lower risk- of tool breakage and also lower costs resulting from non-quality (useless parts, rework, etc.).

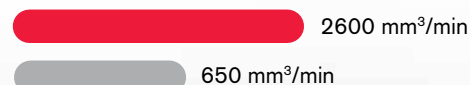
This is possible thanks to a generator built into the equipment that can reach 400 amps, **four times more power than the standard one.** High-performance ONA machines (High Speed EDM) enable more material to be removed (up to 4 times more than with a standard 100 amp generator), resulting in a significant increase in productivity and performance.

The generator power enables a stock removal of Nickel alloy up to 2600 mm³/min compared to 650 mm³/min of the standard generator. >>



Double head ONA machine with 800 A. **reduces lead time up to 50%.**

NICKEL STOCK REMOVAL



● ONA GENERATOR
● STANDARD GENERATOR

On the other hand, in terms of the **time used for machining**, electrical discharge machining is comparable to milling, or **even better, when using a double-head ONA machine.**

ONA is the only manufacturer in the world that develops equipment with this capability. These are machines with a high-degree of automation and ecological filtration systems adapted to this high rate of stock removal.

At the forefront of innovation

Experiences such as those of AVIC Chengdu and Paradigm Precision place ONA **at the forefront of EDM research and innovation for the aeronautical industry.** The solutions provided by ONA's engineers are being used to turn electrical discharge machining into a more than serious competitor of other, more traditional machining techniques in the sector, such as milling and broaching.

ONA's future lies in continuing to put in the same effort and energy to R+D+I, offering manufacturers of turbine components turnkey projects and new technological

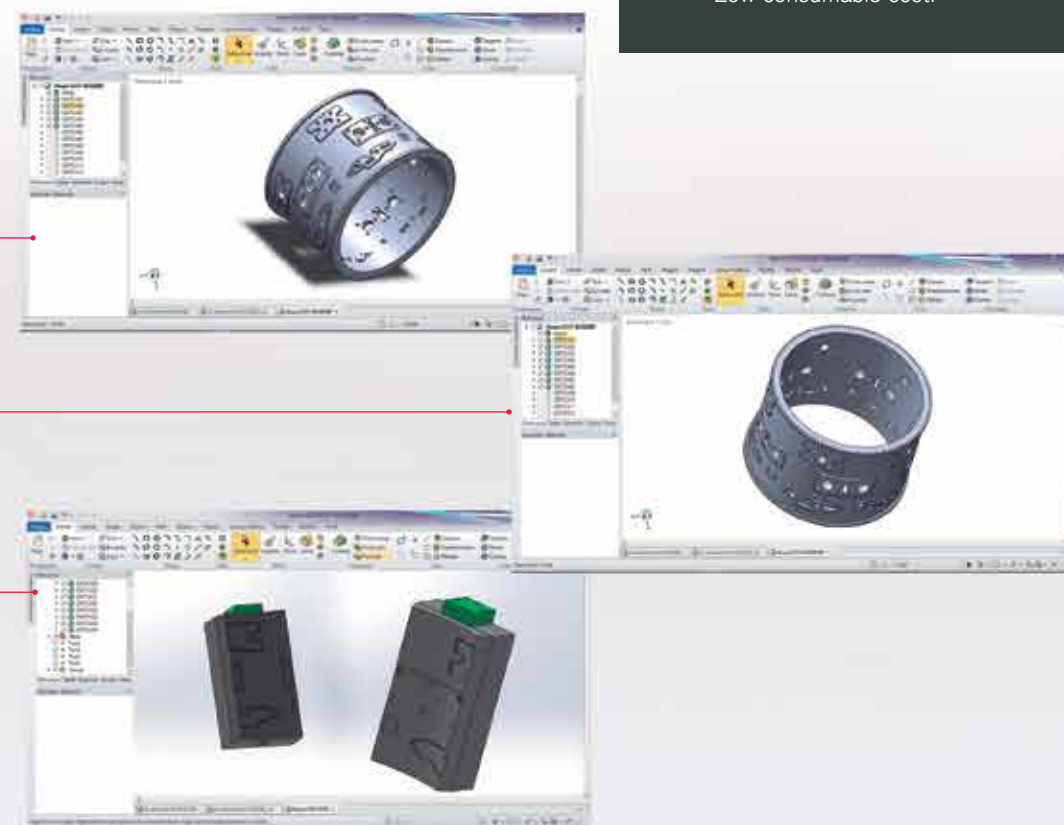
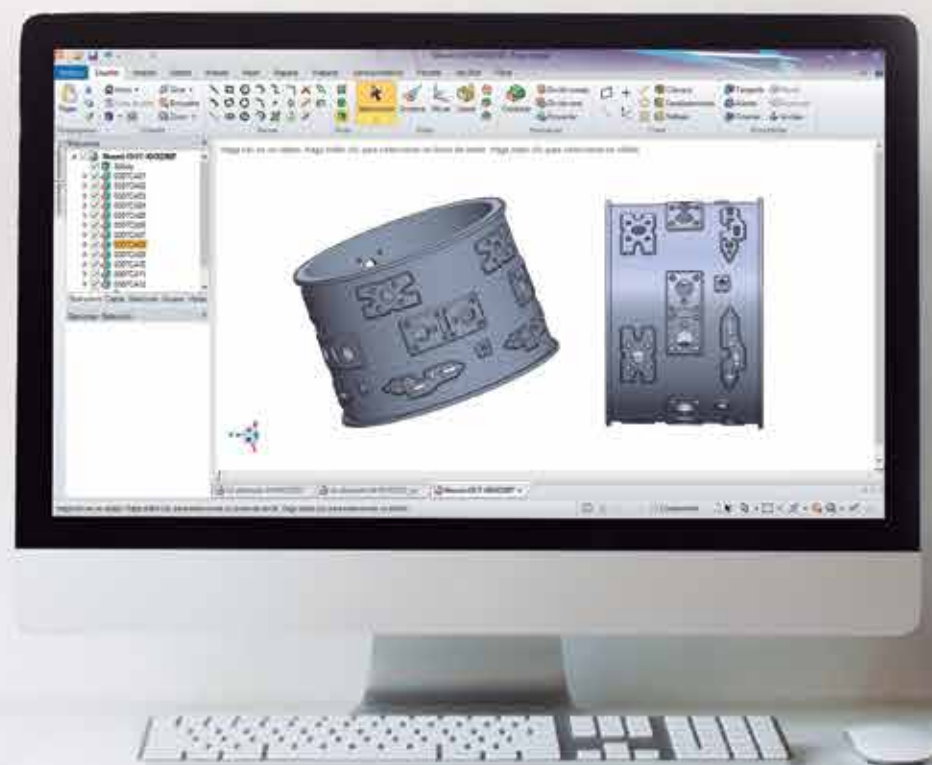
resources for electrical discharge machining that help them improve, grow, and reduce production costs without compromising the quality and precision of the turbine components.

Other recent contributions by ONA to the aeronautical sector have been:

- Wire electrical discharge machining for **the airfoil shape of automated cutting in vertical rings.**
- Wire electrical discharge machining **for the production in turbines discs firtrees.**

ONA benefits for GAS TURBINE HOUSINGS production

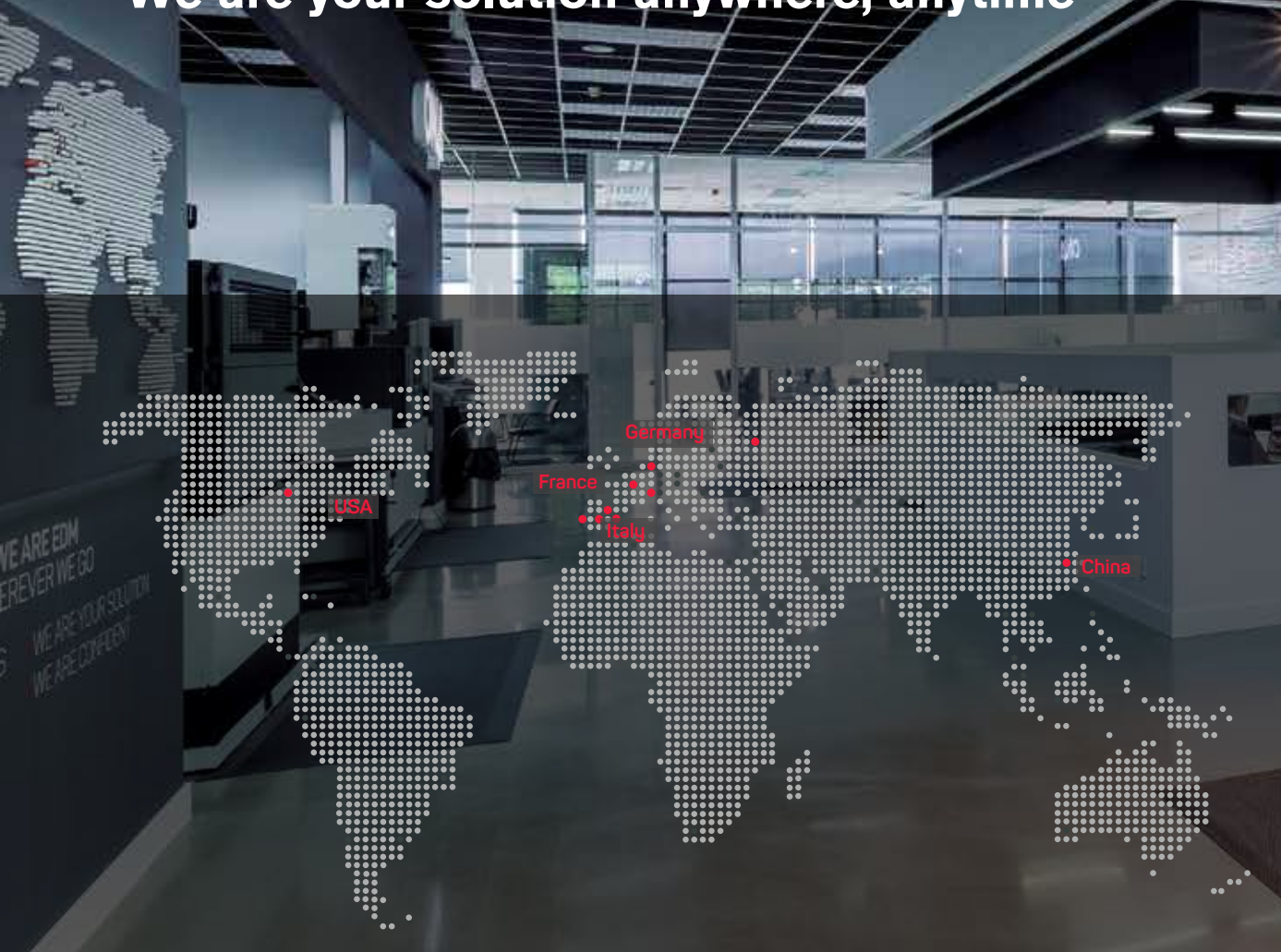
- Electrodes optimized design.
- 400 Amp. generator.
- Double head ONA EDM machines.
- Large electrodes automatic tool changer.
- Low consumable cost.



TECHNOLOGICAL LEADERSHIP

SOLUTIONS TO CLIENTS SPECIFICATIONS

We are your solution anywhere, anytime



TECHNOLOGICAL LEADERSHIP

Bukuma GmbH:

The perfect solution for manufacturing large molds for major automotive firms

Some months ago we received a visit from the German firm BUKUMA, which was looking for a large machine with very tough performance requirements. As a result of the visit they purchased an ONA QX8, which has provided excellent results. They now have three ONA EDM machines at their 2 plants.

BUKUMA GmbH was founded in Germany in 1963. It specialises in the design and manufacturing of molds for the injection of plastic parts for the automotive and construction industries. Its customers include many of Europe's leading automotive firms. **Volkswagen, Daimler Mercedes, Audi, Lamborghini** and **Porsche** are just some of the names that trust **BUKUMA** to produce their moulds.

The stringent requirements of the automotive industry meant that the firm needed to find solutions that could produce large components to a very high degree of precision. Some months ago the ONA QX8 was installed at their facilities. The excellent results obtained with this model and the good relationship forged with ONA have led them to purchase two more machines: a NX4F die-sinking EDM model and an AV100 wire EDM model. The latter model can be seen at the ONA stand (Stand C92 in Hall 13) at the 2019 Hanover fair on 16-21 September.

Technological skill at the service of our customers

BUKUMA now has several EDM machines at its facilities, so the firm knows the relevant technology



well. Managing Director Mirko Schnur explains that they were not entirely happy with the results that they had obtained from several EDM machines made by other manufacturers. The great complexity of their molds called for cutting-edge EDM technology to meet their highly stringent requirements.

This led the production management at **BUKUMA** to visit **ONA** in search of a high-performance machine. They needed a large machine that would reduce production times,

ensure excellent quality and be backed by professional, proximity-based technical service.

They saw first-hand the full potential of technological development of **ONA** as the market leader in EDM, with its broad experience in special and large-format machines.

The solution offered by **ONA** was the ONA QX8: a large-format die-sinking EDM machine that met all their requirements. >>

Founded in 1963

BUKUMA GMBH

2 production plants in Germany

Bukuma GmbH
Ohlenfeldstraße 2
56154 Boppard/Buchholz



Perfect finishes in large volumes

QX8 - DIE-SINKING EDM MACHINE

Rapid machining in large workpieces

The new machine has lived up to all their expectations. With its 2800 x 1500 x 850 mm work tank, it can handle large-sized workpieces with weights of up to 20 tons. It is also well suited to mould manufacturing, as it can work very quickly and still provide excellent surface finishes.

ONA worked closely with **BUKUMA** throughout the process of setting up the machine at their facilities and provided advanced training for plant operators on various applications.

The firm has chosen ONA as its partner for EDM

BUKUMA has confirmed its choice of ONA by acquiring two more machines. The **ONA NX4F** die-sinking EDM machine offers great performance in precision and stability, and long X and Y-axis travel. The **AV100** wire EDM machine is a large-format unit that offers high machining capacity.

BUKUMA's one of the production plan.



Passion for parts - this philosophy lies in the components manufactured by Bukuma.



"The great complexity of our moulds called for cutting-edge EDM technology to meet our highly stringent requirements"

explained Managing Director Mirko Schnur

EQUIPMENT

1 die-sinking EDM machine: model ONA QX8-B1L
1 die-sinking EDM machine: model ONA NX4F
1 wire EDM machine: model ONA AV100

SECTORS AND CUSTOMERS

Mainly automotive, but also construction and medical technology.

They work for leading European automotive firms: **VOLKSWAGEN, DAIMLER MERCEDES, AUDI, LAMBORGHINI, PORSCHE, SEAT**, etc.

TECHNOLOGICAL LEADERSHIP

Concours Mold INC.:

Concours Mold is a direct supplier to companies such as General Motors, Ford, Nissan, Chrysler, Tesla, Toyota, Volkswagen, BMW, and Mercedes-Benz



Concours Mold is a direct supplier to companies such as General Motors, Ford, Nissan, Chrysler, Tesla, Toyota, Volkswagen, BMW, and Mercedes-Benz. ONA's TQX10 double head machine makes it possible to save 50% of the erosion time and increase productivity by 200%.

For more than 65 years, **ONA** has been focused on EDM, developing excellent quality solutions for the production of highly accurate and reliable molds and parts.

There are already more than 15,000 **ONA** machines installed in major automotive and turbine manufacturing companies around the world. One of such companies is **Concours Mold**, which is one of the leading manufacturers of large automotive molds in North

America. Headquartered in Ontario (Canada), it also has plants in Mexico and in the United States, and is the direct supplier to **General Motors, Ford, Nissan, Chrysler, Tesla, Toyota, Volkswagen, BMW, and Mercedes-Benz**.

In order to provide a reliable response and the best possible service to such important companies, last year, **Concours Mold** acquired the double head ONA TQX10 die-sink EDM machine, which is the biggest in >>

Founded in 1994

CONCOURS MOLD INC.

Lakeshore, Ontario – Canada
N8N 5C4

Other production plants in Mexico (Puebla) and USA (Alabama).



INTERIOR TOOLING

Wholly integrated single-piece units can be manufactured from all-urethane and all-polypropylene resins.



EXTERIOR TOOLING

Concours Mold's complete product capabilities for interior and exterior tooling parts are of superior quality & high standards which are trusted worldwide



the market.

It was not the first time that **Concours Mold** used ONA technology to manufacture its molds. It has been our client for a quarter of a century now and, before acquiring the ONA TQX10, it already had 2 ONA machines, with double head too: a ONA THS700 and a ONA TQX8 B1L.>>

EQUIPMENT

Its equipment includes ONA double head machines: a THS700 and a TX8 B1L.

SECTORS

Automotive, consumer goods, equipment and heavy trucks.

CUSTOMERS

They work for leading European automotive firms: VOLKSWAGEN, DAIMLER MERCEDES, AUDI, LAMBORGHINI, PORSCHE, SEAT, etc.

Erosion test to compare qualities

Before acquiring the TQX10, and despite being "very satisfied" with the performance of the 2 **ONA** EDMs already operating in their facilities, **Concours Mold** wanted to perform a test with other competing equipment to "compare options". The result of the test was that ONA's technology provided them with "better performance" both in terms of productivity and in the final quality of the molds.

Ed Ergun, Sales Manager at the Canadian company, stated: "We are always looking for the latest breakthrough in machinery and equipment. We are willing to test and implement it, if that results in a more agile manufacturing process, better quality parts and shorter lead times for our clients."

Having EDM machines, such as the one **ONA** provides, makes it possible for **Concours Mold** engineers to achieve their demanding quality goals for molds, as well as to rigorously fulfill the established delivery times, between 8 and 24 weeks, depending on the mold size and on its technical complexity. The company can manufacture between 300 to 350 molds per year.>>

"Acquiring a double head ONA TQX10 and 2 robot changers with 132 positions will ensure superior working times and quality. An investment designed for our future. This is our tomorrow"

explained Mr. Brad Bechard,
Machinery Manager

ONA TQX10 with 2 Robots installed at
Concours facilities in Canada.



Double head EDM

Concours Mold was clear that its new EDM needed to have a double head, something that can be accomplished by very few manufacturers in the world. **ONA** was one of the first to develop this technology, more than two decades ago.

Combining these 2 heads simultaneously and independently saves 50% of the erosion time and increases productivity by 200%. The **ONA** TQX10 equipment purchased by **Concours Mold** also includes 2 EROWA robots for changing electrodes on the sides, which avoids machine downtime, and enables the mold production to be fully automated.

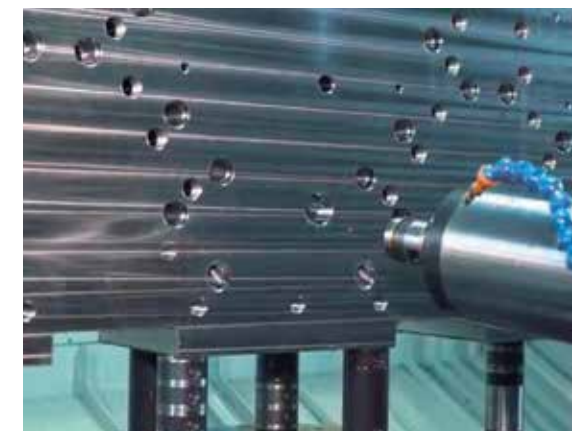
One of the main advantages of this model is that it can be used as 2 independent machines by separating the tank. However, it can also be used jointly as a single machine, but with double head. In the latter case, both heads communicate with each other to control erosion zones and increase productivity.

They are especially useful models for the manufacture of large molds and different cavities, the specialty of **Concours Mold**.

Some improvements we have recently made in **ONA**'s double head EDM models are:

- The distance between heads can be modified according to specifications.
- Vertical extension with automatic double changer. Two chucks are fitted on the C-axis and at the end of the extension. This makes it possible to optimize the use of extension electrodes, and to erode at a greater distance without colliding with the head.
- Automatic adjustment of the dielectric level, maintaining it at the level of the head.
- Its software is specially designed for double-headed equipment, which facilitates managing the performance of both machines.

At **ONA**, we offer companies the possibility of configuring machines according to their specific needs. In addition, we have more than 70 modular setups, for both die-sink and wire-cut EDM, with delivery times similar to those of a standard model and without additional charges.



Detail of a mold for the automotive industry made by Concours mold.

EMPLOYEES

380 employees.

ACTIVITY

Design and manufacture of molds with one to two cavities for injection moulding, RIM and compression processes, in the main, for the automotive industry (molds for the outside and inside of automobiles). The plants work 24 hours, 7 days a week.

It also manufactures molds for heavy truck components and a variety of consumer goods for clients like Rubbermaid and Electrolux.

TURNOVER

90 million US\$. It holds third place in the ranking of mold manufacturers in Canada (almost certainly in the American continent too)

NUMBER OF MOLDS / YEAR

300-350, depending on the size.

ASSOCIATIONS

Canadian Association of Mold Makers (CMM); Automotive Parts Manufacturer's Association (APMA).

TECHNOLOGICAL LEADERSHIP

S.A. Hourat:

Manufacturing high value added parts using precision EDM machining.

The French company Hourat has been a major player in the precision machining industry since 1970. Its business philosophy focuses on producing small high value added series for strategic industries such as aeronautics and energy. It has now decided to specialise in EDM for precision machining. And their supplier for this technology is ONA because, as they say "ONA understand the detail and the mechanics". Their latest additions are a QX6 die-sink EDM model and an AV35 wire-cut EDM model.

Twenty-nine years ago, Jean Hourat set up his first precision machining workshop. Today, the French firm occupies a very important place in the machining sector, producing quality high-precision parts for such wide-ranging industries as aeronautics, energy, oil and rail. For many years they have imbued their work with a rigorous focus on quality, backed by extensive know-how in turning, milling, grinding and EDM.

In June 2017, the company was bought up by three industrialists: Michel Medioni, Guillaume Germain and Yannick Suzanne. The new management has now undertaken a very ambitious project. "Hourat's vocation is to become a dynamic industrial company. We need to achieve even greater flexibility in design and manufacture", says Yannick Suzanne, the present head. "Every incident must be turned into

"We've built up a relationship of trust with ONA. What we most value is their approachability and their capacity to listen. ONA is a solutions provider with very similar values to our own"

says Yannick Suzanne, the present head.

a source for reflecting on ways of improving our processes".

Customer orientation, a philosophy shared with ONA

Customer orientation is one of Hourat's principal values. By having the most advanced technology and expert human resources and listening to the customer, they can meet even the most demanding requirements.

It is precisely this philosophy, shared by **ONA**, which led Hourat to choose us as their supplier of EDM technology. "We've built up a relationship of trust with **ONA**. What we most value is their approachability and their capacity to listen. **ONA** is a solutions provider with very similar values to our own", says Yannick Suzanne. >>



 Aeronautical workpieces manufactured by Hourat.



 Workpieces for the Oil and Gas industry.

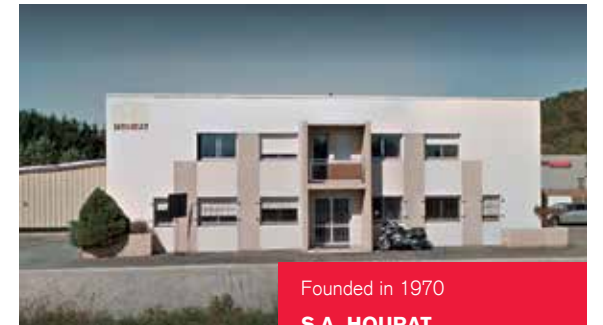


 Railway workpieces manufactured by Hourat.

Certificaciones y reconocimientos

In 2013, **Hourat** became the first company to be certified for EDM by SAFRAN (a French hi-tech multinational working with Airbus), backed by NADCAP (National Aerospace and Defense Contractors Accreditation Program).

And it's not the only recognition of its work quality. The French company has also obtained ISO 9001 and EN 9100 certifications (the quality standard of the Aeronautical, Space and Defence industries) and NADCAP Electrical Discharge Machining certification, among others.



Founded in 1970
S.A. HOURAT.
Parc d'activités Clément Ader
64510 Bordes



 ONA's France General Manager with Yannick Suzanne Hourat's present head.

EQUIPMENT

SEDM ONA QX6
WEDM ONA AV35

SECTORS

Aeronautics, energy and oil and gas industries.

CERTIFICATIONS

SAFRAN is part of the Airbus Group with a Nadcap certificate.
ISO 9001 AND EN 9001 certificates.

Commitment to EDM

QX6 and AV35 MACHINES with ONA Smart Connect

A guarantee of precision and quality

Hourat has decided to focus its business on EDM, and already has 9 machines operating at its premises. The latest arrivals from **ONA** are a QX6 and an AV35 model. And the firm plans to extend its plant to house another thirty machines of this type

Hourat has Nadcap EDM certification, which, among other factors, takes into consideration

optimum process management targeting improved quality and reduced costs throughout the aerospace and defence industry. The firm knows that by partnering with a company like **ONA**, it can be sure of fulfilling the demanding Nadcap requirements.

Hourat approached **ONA** with requirements for total traceability in its parts. By integrating the

ONA Smart Connect service, Hourat can ensure traceability of all relevant parameters in manufacturing to ensure optimum performance. "**ONA** stands out for its service. We are experts in automation and in designing turnkey projects. Show us a part and we'll show you our capabilities", says Damien Roure, Sales Manager at **ONA**.

TECHNOLOGICAL LEADERSHIP

Stickel GmbH:

Excellence in the manufacture of automotive parts with a strong environmental commitment



A visit to Stickel GmbH is a unique chance to get a first-hand view of the German firm's commitment to excellence in its production processes and its concern with the environmental impact. This emphasis on sustainability is shared by ONA, which has spent over 25 years researching and developing more sustainable production processes. One of the key factors in Stickel's choice of supplier was the 100% ecological filter included in ONA machines. In 2018, the German firm purchased an ONA AV130 unit, the largest wire-cut EDM machine on the market, and since then, it has been delighted with "its high reliability and speed".

Stickel GmbH is a German family firm founded in 1987 which manufactures parts for the automotive industry. This innovative firm seeks excellence in its manufacturing processes, with a strong environmental commitment.

Well used to the high level of assurance demanded by the automotive industry, all its parts meet the strictest quality and precision requirements. The most important manufacturers in the industry, including Porsche, Volkswagen Group, Mercedes-Benz, Bugatti and BMW have chosen Stickel to

manufacture short series of parts for their new cars (around 200 units). Indeed, they manufacture all types of metal parts (crankcases, doors, bonnets, hatchbacks, trims, etc.) for vintage Porsche models from the 1950s.

Innovation oriented towards sustainability

Stickel GmbH focuses on innovation and the development of production processes sustainable. The company has its own foundry and has patented a cleaner

ZAMAK foundry system. This system allows them to recycle 100% of left-over material generated during production processes.

This culture of sustainability is reflected in every area of the facilities. The company has solar panels fitted on all the roofs of its buildings; employees have free charging points and connections for electric cars and they recycle all timber waste for the company's internal heating system (supplying heat to 2 of its 3 pavilions). >>

Founded in 1987

STICKEL GMBH

Porschestraße 2
74369 Löchgau Gewerbegebiet



ONA has shared this same interest in the environment since its foundation. As part of its desire to innovate and seek more cost-effective and eco-friendly solutions, in 1986 ONA patented a revolutionary ecological filtration system for the dielectric (deionised water), used in wire-cut EDM machines. This was the world's first 100% ecological filter. With this filtering system, ONA offers one of the most economic and eco-friendly solutions on the market, with a saving of more than 5,000 euros per year. In addition, it generates no waste and does away with the need for cartridges. This ecological filter was a decisive factor for **Stickel GmbH** and many other companies, including the American multinational General Electric, the largest user in the world of ONA's Aqua prima filters.

"The machine is very reliable, we leave it unattended with no loss in production on weekends without any problem. The speed is surprising."

Matthias Stickel, the representative of the firm.

Surprising speed and reliability

AV130 WIRE-CUT EDM MACHINE

The largest wire-cut EDM machine on the market

It is only possible to maintain optimal standards of quality and pressure if you have the most advanced equipment. The German company knows this well and decided to incorporate **ONA**'s AV130 wire-cut EDM machine, the world's largest EDM machine

Since it was installed, Mathias Stickel, manager at **Stickel GmbH** has been pleasantly surprised by the machine's high manufacturing speed. "The machine is very reliable, we leave it unattended at full speed at weekends without any problem. The speed is surprising.", said a representative of the firm.

Stickel GmbH is not the only German firm to have an ONA machine of this size. In 2009, Lechner Stahl bought the previous model with AF technology, the **ONA** AF130 unit, to add to the 3 ONA machines already present had at its facilities. For Lechner Stahl, specialized in the execution of large wire-cut EDM parts, the **ONA** AF130 machine meets all its expectations of productivity, quality and precision.



An example of the workpieces that Stickel makes for the automotive industry.

EQUIPMENT

Top-level equipment. As well as the new ONA AV130-D1 machine, they also have another small WEDM, three HERMLE machining centres, two Röders machining centres, Trumpf laser cutting machines, EITEL hydraulic presses of up to 800 tons.

CUSTOMERS

Leading manufacturers in the automotive industry. The company's top customer is Porsche, although they also work for VW, Mercedes-Benz, Bugatti and BMW.

TECHNOLOGICAL LEADERSHIP

Ningbo (IKD Co. LTD):

High-precision components with high-quality finishes

The Chinese company NINGBO (IKD Co. LTD) is strongly committed to ongoing research & development in new solutions for the manufacturing of more and more precise components. Its facilities are home to 10 ONA die-sinking EDM machines, which help them to maintain their greatest advantage over their competitors: the precision and quality of their finishes.

IKD was founded in 2013 to manufacture aluminum castings for the automotive industry. It is based in the modern, international port city of Ningbo, and focuses on continuous research with a view to

developing new, high value-added solutions. Its strategic location in an internationally important city which is China's busiest port and the high quality of its products have earned the company several

awards, including "preferred supplier" status from such major customers as **Bosch, Valeo, Continental** and the **Schaeffler Group**. >>



"Only by applying these advanced, high-performance machines can IKD continue to offer its customers such high-precision, high-quality products"

explained Mr. Dongliang Song, General Manager of IKD Co., Ltd.,



Founded in 2003

NINGBO (IKD CO. LTD)

No. 588 Jin Shan Road,
Jiangbei Investment Pioneering Park,
Ningbo, P. R. China

Fully committed to customers

"The manufacturing of aluminium die castings is key in meeting the tough requirements for light weight, energy savings and environmental protection imposed by the automotive industry", states Mr. Bojie Xu, the firm's Tooling Manager.

The high added value that its components provide has led customers such as **Valeo, Bosch, Getrag, Knorr-Bremse, Magna, Nidec & Borgwarner, Continental, Mahle, Nexteer, Schaeffler, ThyssenKrupp, ZF** and others to trust **IKD** as a regular supplier.

In 2016 the company opened a new plant in Mexico to guarantee supplies to Bosch, one of its main customers.

In the words of Mr. Sheng Hong, Vice President of **IKD Co., Ltd.**, "throughout the construction process for the new plant in Mexico the Bosch group provided us with support by sending teams of experts to give us guidelines on projects, technology and even the design of the plant".

Greater autonomy and productivity

The trust shown by **IKD** in **ONA** die-sinking EDM technology is based mainly on the major advantages provided by machines in the QX series for its production processes.

"Only by applying these advanced, high-performance machines can **IKD** continue to offer its customers such high-precision, high-quality products", says Mr. Dongliang Song, General Manager of **IKD Co., Ltd.**. **ONA** can offer levels of productivity, quality and precision hitherto unseen on the market. Mr. Dongliang Song & Mr. Bojie Xu, as General Manager and Head of Machine Tools at **IKD** respectively, have visited the **ONA** head office in Durango on several occasions, most recently during the open day held in May 2018.

A future linked to innovation

As Mr. Dongliang Song puts it, they share **ONA's** emphasis on innovation. "In the future the company will take technological R&D as its driving force and the creation of new products as its direction. We are seeking to enhance our

manufacturing technology while maintaining our position as global leaders of industry and working towards standardization, smart systems and innovation",

In 2013 **ONA** set up premises in Shenzhen (China) to maintain a presence close to its customers and thus offer them the best service. Since then Mr. Kimit Wang, Manager of the company's subsidiary in China, has been assuring the satisfaction of customers there.

EQUIPMENT

8 x ONA QX4 machines.
1 x ONA QX6 machine.
1 x ONA NX4C machine.

CUSTOMERS

Valeo, Bosch, Getrag, Knorr-Bremse, Magna, Nidec & Borgwarner, Continental, Mahle, Nexteer, Schaeffler, ThyssenKrupp, ZF and more.

SECTORS

Mainly automotive.

TECHNOLOGICAL LEADERSHIP

ONA also makes its way into Europe with micro-hole electrical discharge machining technology

The advantages of these machines are numerous and important: Including a high degree of accuracy in finishes, savings in machining time of up to 30%, and a much more economical maintenance.

In 2016, ONA acquired 30% of the North American company AA EDM Corporation, a Michigan-based company specializing in the design and manufacture of highly accurate micro-hole electrical discharge machining equipment. This agreement enabled ONA to enter fully into the technology of **micro-hole electrical discharge machining** and its usage in sectors such as energy, aerospace and automation, in which we already had an important presence with die sink and wire electrical discharge machining equipment.

On the other hand, **AA EDM** could use ONA's know-how for the manufacture and improvement of its equipment, in addition to our experience and deep knowledge of the European market, its **pending assignment**. The company has focused almost its entire activity in the United States, with significant

operations in Russia, China, India, and South Korea.

Europe was its great challenge, and, thanks to ONA, it is facing it: A recent agreement has been reached for the sale of micro-hole electrical discharge machining equipment with an important company in Italy; precisely, one of the countries to which ONA sells the most, along with Portugal.

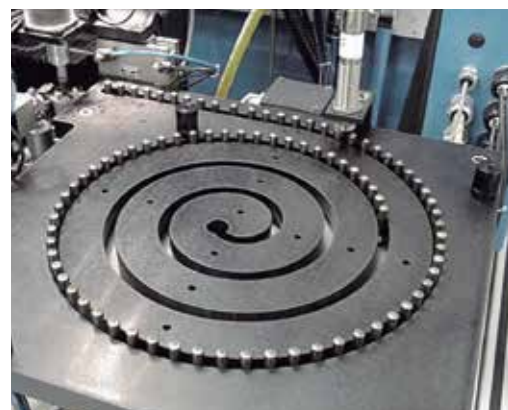
AA EDM model with a high-degree accuracy

The Italian company specializes in the manufacture of injectors for the automation sector, with a range of more than 2,000 different products applicable to different engine types. It already had other 4-shaft micro-hole electrical discharge machining equipment, and has now acquired its first triple

head **AA EDM** model in order to obtain a highly accurate finish. This equipment's 'relevant' advantages, in comparison to the competitors', made it 'a lot' easier for the Italian company to decide to buy. >>

OTHER AAEDM CUSTOMERS

- CATERPILAR
- DELPHI
- CUMMINS
- YANMAR
- UNIVERSITY OF MICHIGAN
- BOSCH
- MAGELLAN
- GE...



Automatic hole adjustment.



3 station AAEDM machine.

SOME ADVANTAGES

▪ **AA EDM machines do not use spindles or rotating electrodes.** This eliminates an important source of errors. These heads can last for decades. There are no deviation problems either. Wide range of hole shapes: Conical, semi conical and irregular.

» The electrode guides of AA EDM machines are designed by taking into account the importance of flexibility. We provide 2-piece electrode guides that allow the use of a wide range of diameters.

» Approximate price: €490.

» More than 500,000 holes per electrode guide.

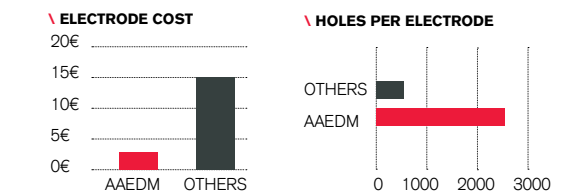
» Change time: Less than 5 minutes.

» 6 different sizes: Cover the full range of hole diameters.

▪ **High-range YASKAWA servomotors in X, Y, Z with direct activation on the C shaft.** We have been producing machines for many years, and we have never had to replace a motor because of a failure. On the B shaft tilt, we use a Harmonic unit with a 50:1 reduction for exceptional accuracy.

▪ **Highly automated equipment.** Capable of totally working in an autonomous way, increasing profitability and productivity. Machines have the Beckhoff CNC control system made in Germany by default, which is very simple to use.

▪ **400% cheaper electrodes** for the same rod length. Each electrode makes at least 2,400 holes.



▪ **AA EDM generator technology is faster.** In addition, the machine electrodes don't need to be changed so often. The result is savings of up to 30% in machining time.



96% OEE (Overall Equipment Effectiveness)



Simple with a low maintenance cost



More Precise



Savings in consumables



Customized design and programming



Modular design and minimal footprint



Robot part handling.

MACHINE AUTOMATION

1. INTEGRATED FLOW STATION

- AA EDM machines can be supplied with a flow station that measures each hole after EDM.
- While the machine itself rarely makes rejects the flow station does insure that the operator has loaded the correct electrode and the machine produced the exact size hole required.
- If the machine sees that parts are consistently out of flow spec., it will alert the operator and stop.

2. ROBOT PART HANDLING

- Flexible machine layout. It allows adding stations, adapting to customers part handling methods, and future proofing the machine.

3. BARCODE READERS, LASER MARKERS AND VISION SYSTEMS

4. AUTOMATIC HOLE HEIGHT ADJUSTMENT

NEW TENDENCIES

AUTOMATION:

the great answer to the challenges of the industrial sector

These days, companies that want to be competitive know that they have to shorten production cycles and reduce costs. The key lies in improving the efficiency of manufacturing processes without impacting product quality. Automation can provide an answer to many of these challenges. Ever more companies—from the largest corporations to the smallest SMEs—are investing in solutions that will allow them to automate their processes. They know there are plenty of benefits to be had. But... what is industrial automation and what benefits does it offer?

Industrial automation involves the use of control systems and IT to control and monitor industrial processes or machines in such a way that they function automatically, thus minimising human intervention. In other words, it means automating the most repetitive processes by letting the automated manufacturing cells do the work.

Industrial automation is making its way into all branches of industry, due to the immense benefits it can offer in manufacturing processes: increased productivity, reduced manufacturing times, uniform quality, flexibility and safety. And all this comes with optimisation of product costs with actions such as:

- **Performing operations** that were previously impossible to control, manually and intellectually.
- **Improving the possibilities of product availability.** With automation, suppliers can manufacture the necessary quantities of parts whenever the customer requires.
- **Simplifying maintenance work.** Simplifying operation and maintenance.
- **Improving staff working conditions** by doing away with complicated work and increasing safety.
- Integrating production and management systems.>>

Its great benefits:
increased productivity,
reduced manufacturing
times, uniform quality,
flexibility and safety

The result of an automated job is efficiency and cost reduction in all areas. Performing automated manufacturing processes helps reduce energy consumption, saves on labour costs, makes more rational use of resources and improves production processes, and thus product quality.

The only option if you want to commit to competitiveness

A few years ago, the great focus of automation was to increase productivity as much as possible (because automated systems can operate 24/7). Now, however, the focus has changed. Companies still want to maximize production, but they also want to improve quality and, above all, to boost flexibility in production processes by adapting to each customer's specific needs. The future lies in personalization.

Given the current level of competitiveness in the industrial sector, there's really no alternative. Companies that fail to incorporate automated solutions will have a hard job achieving the levels of productivity, quality and personalization required by the great strategic customers such as the aeronautical and motor industries. It is now essential to adopt the most advanced technology.

Increase in automation projects

The machine tools industry has seen an increase in demand for automation solutions, and ONA is no exception. Ever more customers want some type of automation in their machines, from electrode changers to robots with several machines or manufacturing cells.

ONA first started to offer automation options in 1992. Since then it has continued to research and develop different options to meet its customers' needs

Thanks to its long experience in this area, the company now has a long list of automation solutions integrated into machines designed for all types of user:

- **A wide range of automatic changers** (from linear to rotary with 20 or 40 positions) .
- **Multi-electrode and part/workpiece/pallet-changing robots** that can operate with one or several machines.
- **Integration of two multi-electrode robots in a twin-head machine.** The option of having two heads in the machine reduces erosion time by up to 50% and increases productivity by 200%. For example, ONA's latest model is the ONA TQX10 with a dual head, two multi-electrode robots and operating software.
- **Development of personalized software.** ONA's machines incorporate powerful process control software for controlling the entire manufacturing process at all times.
- **Manufacturing cells.** Possibility of integrating several machines in flexible manufacturing cells.

The ONA engineering team also works to integrate digitized solutions in their machines, with all the advantages of Industry 4.0. The goal is to improve productivity levels and optimize manufacturing processes to ensure maximum part quality.

As a result of this research, customers now have the option of integrating an ONA Smart Connect solution. Some of the chief advantages of this comprehensive service include real-time machine monitoring, access to and analysis of the erosion performed and total part traceability.

Ever more customers want some type of automation in their machines, from electrode changers to robots with several machines or manufacturing cells

BENEFITS OF ONA'S AUTOMATED PROCESSES

- **Greater productivity** by ensuring maximum machine operating time with no unnecessary stops.
- **Higher quality parts** due to greater control and monitoring throughout the production process, from the start through to the final product.
- **High degree of flexibility**, adapting every machine to the specific production processes of the customer.
- **Reduction in production costs** in all areas, from savings in energy and materials to labour savings.
- **More intuitive machines** that are easier to operate, without expert training.
- **Real-time information** on the form and manufacturing time of each part, identifying possible potential risks to production long before they become real problems.
- **Reduced human intervention**, meaning less risk of the possible mistakes that can be caused in manual operation and greater safety for personnel, who do not have to intervene in possible situations of risk.
- Reduction in manual verification of various process parameters.



Highly automated machines capable of working autonomously thus enhancing their cost-effectiveness and productivity.



Information storage and data analysis.



Real-time information on the equipment's performance.



Monitoring and remote control with network connection.



Alerts on the status of each piece of equipment.



Traceability.



Screen with highly intuitive interface, user-friendly numerical control.



Complementary information on the condition of the consumables, the machine's consumption and erosion time.



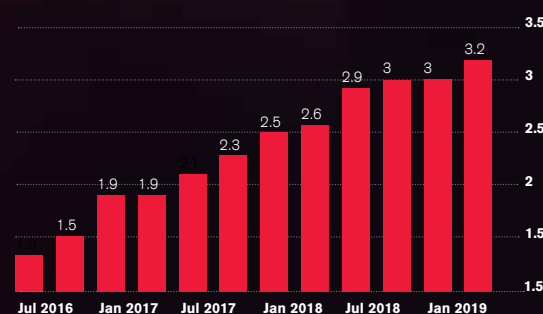
INTERVIEW

TARGETING A BOOMING MARKET:

the American aerospace
and automobile industry

In the first quarter of 2019, the US economy grew by 3.2%, well ahead of forecasts. ONA is well aware of the key importance of the automobile and aeronautical industries to the American economy. In 2006, after operating in the country for several years with American distributors, it set up ONA EDM USA. We speak to Mikel Ocejá, manager of the US subsidiary.

According to a report by the **US Department of Commerce**, between January and March 2019, the American economy grew by 3.2%, far ahead of the forecast rate of 2.3%. This also represents a major rise on the last quarter of 2018, when GDP rose by 2.2%. However, it is important to note that this trend has been driven mainly by an increase in government investment, offsetting a fall in consumption and spending by the business sector. Analysts continue to predict a slow-down in the national economy over the next few months.



SOURCE: TRADINGECONOMICS.COM | U.S. BUREAU OF ECONOMIC ANALYSIS

Good results for Tier 2 of the automotive industry

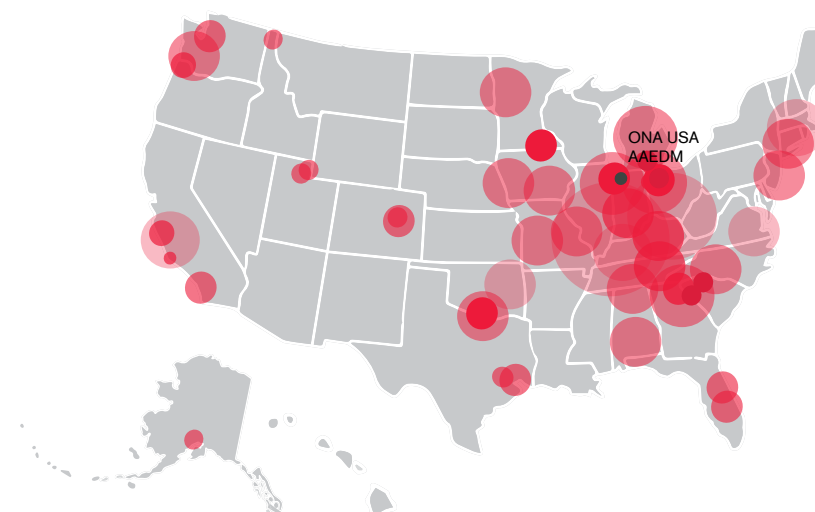
Automobiles are America's strongest industry, accounting for **3% of its GDP**. No other single industry generates as much employment or exports. Indeed, over the last five years, automobile manufacturers have exported more than 692 billion dollars in vehicles and components, nearly \$50 billion ahead of the second largest exporter (the aerospace industry)

Nonetheless, after several years of recovery, in 2019, the American automobile industry is now looking at a saturated consumer market. This phenomenon is reflected in the sales figures for the first quarter, which were 3.2% down on the same period in the previous year.

But it's not all bad news. Despite the first quarter slowdown, the annual

rate in March was better than in the first two months of the year, standing at 17.4 million units—far ahead of the forecast figure of 16.8 million.

This improvement is due to **good results among Tier 2** automobile manufacturers, and brands such as Honda, Hyundai, Kia, Volkswagen and Subaru, which enjoyed increased sales in March.



Motor vehicle parts manufacturing establishments

Motor vehicle parts manufacturing establishments

Mergers in the aerospace industry

Aerospace is one of America's most important industries and the US accounts for 49.8% of the global market. With a key political and strategic role (an example is the eternal struggle between Boeing and Airbus), the industry is a major driver of innovation, creating technologies that are subsequently applied to other fields.

Sales by aerospace firms represent 1.5% of the country's total GDP and it has been estimated that every dollar invested in the industry has an impact of between 1.5 and 3 dollars in other areas. Although exports to

the rest of the world continue to be very important, the economic crisis and the growing skillset of global powers such as Russia and China has led to a slowdown in growth. Nonetheless, the decline in sales of commercial airplanes has been offset by good results in the military sector.

The trend towards mergers and take-overs in the global aerospace industry is gathering pace. In June, **Raytheon** and **United Technologies** announced a "merger of equals" to create an aerospace and defense giant. The new corporation will have total annual

sales of \$74 billion, making it second only to Boeing in the US aviation and defense industries. >>



ONA on the American market

ONA installed its very first machine in America in the 1980s and to date has fitted over 1200. In 2006, after working with local American distributors for several years, ONA set up its own subsidiary, ONA EDM USA. Since then, ONA EDM has been offering its American customers specific EDM solutions. The US is a strategic market for ONA, especially in the aerospace and automotive industries. It has a US customer care service to provide a fast and local response.



MIKEL OCEJA

ONA EDM USA's General service manager.

We speak to Mikel Oceja, service director of the US subsidiary, to find out how the American EDM market operates.

What are the strategic lines that ONA is considering on the US market?

ONA's strategy in the US follows the company's general policy. Our aim is to concentrate on distinguishing ourselves from our competitors through our great technological advantage: we are the principal manufacturer of large and special machines and the only one working exclusively with EDM. Our wide experience and understanding of the technology is something that customers will not find elsewhere.

We have been working with aeronautical companies now for over 25 years. Combined with the technical quality of our machines, this extensive expertise has enabled us to optimize the production processes of leading manufacturers in the industry. And our large twin-head machines can reduce molding delivery times by up to 50%, which gives our customers a major competitive edge.

What competitive advantages does ONA offer its American customers?

ONA has always stood out from the field for its personalized technical service and its close relationship with its customers. For us, the customer is the priority.

As ONA's founder said in 2002, "Our passion is technology. Our service is our vocation". We work closely with our customers and we're always available to respond to any queries or incidents and to provide any guidance they need. Another important factor has been the great interest shown by our US customers in ONA's mineral filter. >>

In 2016, ONA took a major step in microhole EDM technology, buying a 30% stake in **AAEDM Corporation**, a move which gave it access to new business opportunities in industries with which the company was already familiar, such as energy generation, aerospace, automotive and medicine. Since then, the **ONA EDM USA** headquarters has been based at the AAEDM facilities in Michigan.

ONA in the USA, a short history

1955

After the agreement with the American patent-holder, ELOX, an agreement is reached and ONA begins manufacture of its first EDM machines.

1984

ONA contacts potential American clients and starts operating through American distributors: Miller, Advanced Machinery, Gilbert & Richard, Penco Machinery, Gosiger, etc.

1995

Launch of ONA AMERICA INC, a joint venture by ONA and Gosiger, with ONA providing the technology and the US partner contributing an extensive sales network.

2016

A technician from ONA Durango moves to ONA USA, to help with technical servicing of machines.

ONA takes a major step into microhole EDM technology, acquiring 30% of AAEDM Corporation



1954

Talleres Electromecánicos ONA takes an interest in an American company's new technology, electrical discharge machining (EDM).

1983

The US begins to purchase Spanish industrial products and a government-sponsored study names ONA as one of the country's best companies.

1988

ONA starts working with the distributor Mc Williams. The results are very satisfactory.

2006

Foundation of ONA EDM USA, 100% owned by the Spanish firm.

2019

Mikel Oceja from ONA Durango moves to ONA EDM USA.

ADDITIVE MANUFACTURING

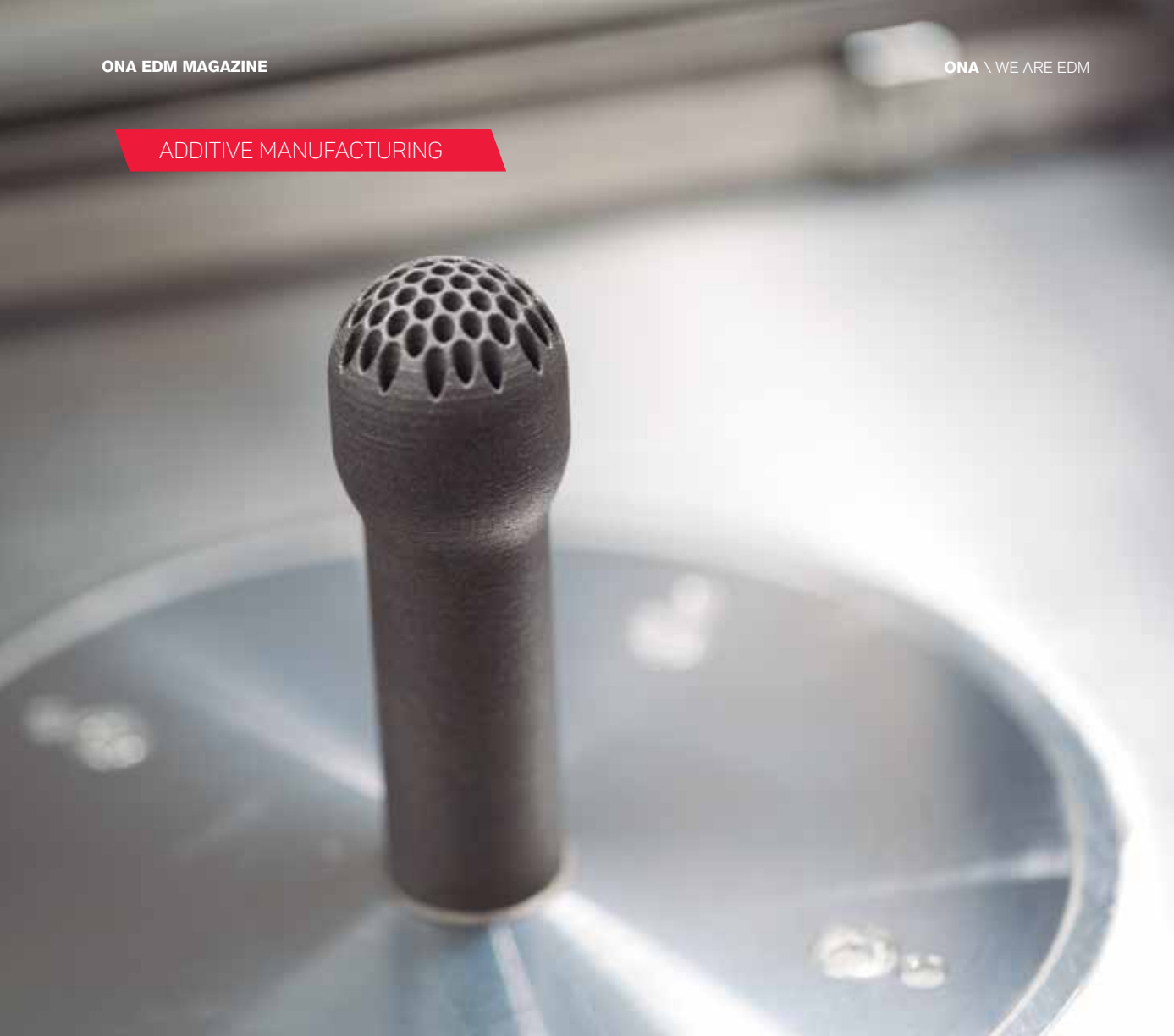
THE EXCITING NEW FORM OF MANUFACTURING

that is destined to transform
the industrial sector

Additive manufacturing is one of the most important new technologies and one of the areas forecast to see greatest future growth and development. In the field of advanced manufacturing, additive manufacturing, or AM, is now a key process in industry and among research centers. Often associated with the term 3D-Printing, additive manufacturing covers a group of highly innovative technologies that have revolutionized the way products are conceived, designed and manufactured. In recent years, AM has experienced a spectacular rise, due to the important advantages it offers, producing highly complex parts in less time at a very competitive cost.



ADDITIVE MANUFACTURING



Additive manufacturing is beginning to prove its worth as an increasingly efficient, versatile and fast system. Medicine, aeronautics, fashion and the automotive industry... in short, most industries that include manufacturing processes, have incorporated additive manufacturing techniques that are contributing high added value and have great future potential.

A highly cost-effective production option

Additive manufacturing is based on the idea of turning a digital model into a solid three-dimensional object. Over the years, a range of technologies have been developed in the industry, all designed to create highly complex parts, layer by layer, directly and in a very short time.

There are plenty of competitive advantages that make this a highly cost-effective production option. **Additive manufacturing** simplifies the number of stages in the manufacturing process, does away with the need for tools and cuts delivery times considerably. With the added advantage of saving material, additive

manufacturing allows **low-cost production from the very first unit.**

Major differences in precision, quality and price

It is now possible to manufacture in more and more materials, extending the range of AM applications. The different technologies offer major differences in precision, surface quality and price. Each AM technology is particularly well suited to a specific type of industry solution. Additive manufacturing processes have proved particularly effective for creating prototypes or first pieces, for producing very small series or unique parts and for manufacturing extremely complex pieces. >>

Additive manufacturing techniques can be divided into two broad groups:

■ Additive manufacturing for plastic parts.

The increase in the number of firms supplying machines and materials augurs a great future for this technology, and many companies have adopted it due to the low cost of the equipment involved. With truly affordable prices (in many cases less €10,000), it is possible to purchase machines that allow series to be manufactured in materials such as ABS or PLA.

■ Additive manufacturing for metal parts.

Although the equipment is more costly, this is one of the most popular techniques, since it allows very complex parts to be manufactured in different materials (polymers, metal, ceramics, etc.). The great challenge to its large-scale use is precisely the cost of the equipment. There are various techniques on the market: Fused Deposition Modelling (FDM), Stereolithography (SLA) and PolyJet, selective powder bed fusion (SLM, SLS, etc.) and direct metal injection (DLMD, Laser Cladding, etc.)

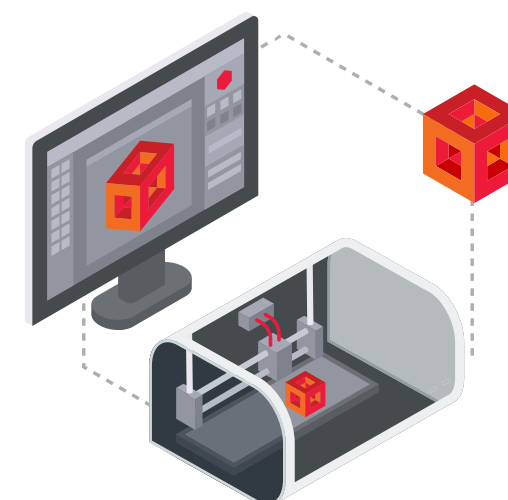
Additive metal manufacturing in the aerospace industry

The **aerospace industry** was one of the first to understand the great benefits of additive manufacturing in metal for its production processes. Large companies from the industry have extolled the immense competitive advantages of the technology, which reduces production times and offers greater freedom in terms of geometry and shapes.

In 2017 **Airbus** signed a research agreement with a firm from the industry to develop additive metal manufacturing in the aerospace industry. Thanks to this technology, aerospace parts are lighter and more complex and the production processes are faster and more economical. "This agreement combines the experience of two of the largest aerospace companies in the world in the additive manufacturing of metal, and seeks to overcome the limits of 3D printing for aeronautical production".



Additive manufacturing simplifies the number of stages in the manufacturing process, does away with the need for tools and cuts delivery times considerably



ONA's commitment to additive manufacturing

ONA has always been committed to innovation and development. In additive manufacturing, the company sees a clear opportunity to bring to bear all its experience in developing production processes and manufacturing equipment.

ONA has always stood at the forefront of the latest technological innovations. Now it has committed to the AM industry, taking a stake in two new companies that are developing different technologies: **Addilan** (Wire Arc Additive Manufacturing or WAAM) and **Samylabs** (Selective Laser Melting or SLM).

ADDITIVE MANUFACTURING



The Great Advantages of Additive Manufacturing: Savings in Raw Material and Reduced Lead Time

Increasingly, companies are coming to understand the revolutionary changes that additive manufacturing is bringing to industry. **ADDILAN** is working intensely to educate agents in industry on the potential of this technology and the great advantages it offers for production processes, by reducing lead time and cutting the cost of raw materials.

ADDILAN has seen increased interest in additive manufacturing among companies operating in strategic industries such as aerospace, oil & gas, shipping and rail. Firms from Europe and America have contacted us to learn how WAAM technology can optimize their production processes and make them more market-competitive.

ADDILAN concentrates on the high value added and medium-large components market. It offers innovative advanced manufacturing

technology as an alternative to traditional production processes. This can cut the cost of raw materials and machining by up to 70% and reduces lead time by up to 37%.

And together with these improvements in cost optimization, strict compliance with technical specifications is also assured.

ADDILAN will be attending FORMNEXT next November to share its knowledge of WAAM technology >>



Oil&Gas Industry

Lead Time.
Reducción del Lead Time.

- **From weeks to days** (20 hours 41 min).
- **37% reduction** in costs.



Aeronautical industry

85% of raw material currently lost in manufacture.
€10,000 per day.

- **Savings** in raw material.
- **Reduction** in machining costs.



<< Addilan technology

- WAAM Wire Arc Additive Manufacturing technology.
- Additive Manufacturing process with a high feed rate, using arc-welding and wire-feed technologies.

Its customers are manufacturers of high value-added, medium/large parts in highly demanding industrial sectors, including aeronautics, aerospace, energy, shipbuilding and oil&gas.

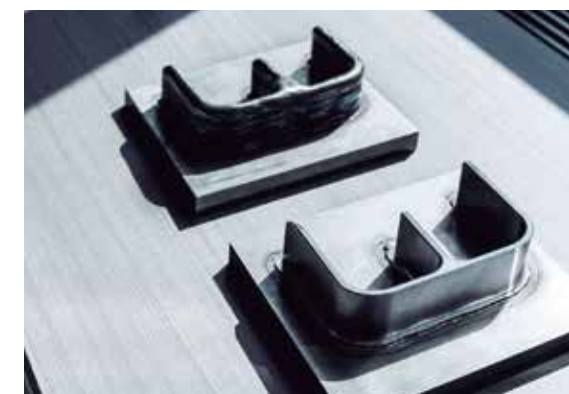


FORMNEXT 2019

19 - 22 November 2019
Stand 12.0-B82 · Frankfurt - Germany

ADDILAN will be exhibiting at FORMNEXT, the world's largest additive manufacturing fair and a global meeting point, to be staged in Frankfurt from 19 to 22 November.

The event is a unique opportunity to build business contacts, attend lectures, acquire inside market knowledge and discover new technologies from the world of additive manufacturing.



ADDITIVE MANUFACTURING

APPLICATIONS IN STRATEGIC SECTORS

AERONAUTICAL	INDUSTRY	MEDICAL	DENTAL	MODELS BUILDINGS
				
Engine and turbines components	Low cost prototypes and individualized components	Prosthetics and ortopedical prosthetics	Manufacture 50 dental implants in one go in just a few hours	Create replacement parts no longer in stock

Advantages of SLM technology for metal

SLM (Selective Laser Melting or Selective Laser Sintering) technology allows for the creation of complex small-scale pieces by adding metallic powder fused with a laser. The main advantage of 3D printing in metal using laser is that it allows you to make end pieces with excellent mechanical properties, which, in many cases,

cannot be made using other means. Another great benefit of this technology is its capacity for making high precision (<10 um) pieces in a large range of materials like steel alloys, Inconel (chrome - nickel), cobalt and stainless steel.



Samylabs presents its new metal SLM 3D printer with in-house technology

ALBA 300



Samylabs became the first Spanish company to develop a 3D printer using this technology. The new model developed in collaboration with ONA Electroerosión is characterized by having its own technology and a competitive price, making 3D printing more affordable for small companies and training centers.

The main advantage of the new model is that it has its own technology. It has control firmware, 3D mechanical design, a laser control system developed fully within the company. In addition, its own software for hot rolling means the client can alter different settings of the printing process on the spot.

Tidy in its design and with house power supply, the new machine from **SamyLabs** is intended to work in an industrial as well as in an

office environment. In Europe, there are less than ten companies selling SLM 3D printers and **SamyLabs** is the only one in Spain.

SamyLabs is also presenting its new corporate image, a much more contemporary image, reflecting its evolution and all the experience gained in these first few years of operation. >>



SAMYLABS AND ONA AS INDUSTRIAL PARTNER

SamyLabs is an engineering firm founded in 2016 with an aim to develop 3D printers for metal using SLM technology and is the first Spanish company to develop a 3D printer with this technology.

The company was formed by three engineers with broad experience in the fields of mechanical and electrical design, as well as in software and firmware. This know-how has helped them develop all their own technology within the company, with the aim of lowering costs and commercializing their machines at more competitive prices.

In addition, their collaboration with **ONA** Electroerosión has been fundamental precisely for launching a commercial 3D printing machine on the market. Its choice of an industrial partner like **ONA**, with its vast experience in manufacture and marketing, allows **SamyLabs** to focus exclusively on technological development.

EMO HANNOVER

ONA presents its LATEST TECHNOLOGICAL ADVANCES IN EDM

at EMO Hannover 2019, with backing
from top customers

A PARTNER FOR THE FUTURE

ONA

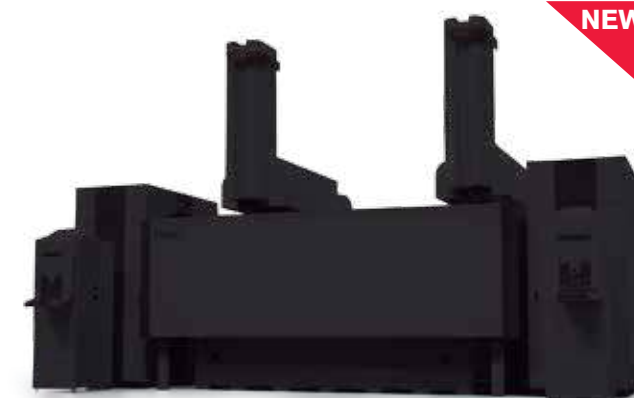


EMO HANNOVER 2019

16 to 21 September 2019
Hall 13, C92 · Hannover - Germany

ONA is attending the exhibition with a selection of technological innovations that make it an EDM industry leader. The firm will be giving a sneak preview of its die-sink EDM model, and in the area of wire-cut EDM, it will be showing off its large ONA AV100 model. Visitors to the event in Hannover will also get a first-hand look at ONA's latest developments in applications for the aeronautical and automotive industries.

As an EDM machine manufacturer with over 65 years' history, ONA is a veteran at the EMO exhibition. From 16 to 21 September this year, ONA will be at Hall 13 - Stand C92, once again showcasing all its technological potential, the fruit of its commitment to innovation.



NEW ONA SEDM MACHINE

- \ New control
- \ New technology
- \ New ways of production

Discover the production of the future at EMO Hannover 2019 together with ONA EDM. >>

New control in die-sink EDM

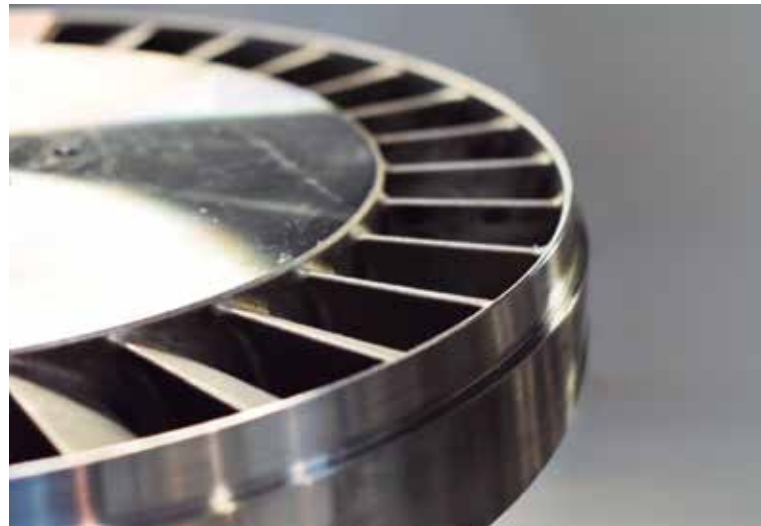
ONA has decided to premiere its latest die-sink EDM model at the German trade show. One of the chief innovations in this new model is its brand-new control. Designed to maximize usability, it comes with a touch-screen interface and intuitive and visually friendly menus. It allows operators to work in 3D without limitations and export the files directly from the CAD-CAM.

This new control allows any user to optimise manufacturing processes, achieving excellent results. This is another exciting example of ONA's excellent innovating work in the EDM industry, designing ever more perfect equipment.

The new ONA model will also be a fully automated twin-head machine. The double head reduces production time of large molds by up to 50%. And the 80-position Erowa robot automates electrode-changing, cutting out change time altogether. Visitors to the stand will have a chance to see the installation of a similar machine in the American customer CONCOURS Mold, with two Erowa robots.

Wire-cut EDM

As a leading manufacturer of large parts, the ONA booth will also feature the wire-cut EDM ONA **AV100** model at German mold manufacturer BUKUMA. The German company, which has once again chosen ONA as its trusted partner in EDM, already has three ONA machines: QX8, NX4F and AV100.



OGV developed jointly with the Advanced Aeronautics Manufacturing Centre.

Technological advances for the aeronautical industry

ONA's commitment to research and innovation has made it a leader in the latest technological advances in the aeronautics industry. With a team of experts and the confidence of its customers, ONA has developed entirely new EDM solutions for the aeronautical and turbine industry. The ONA stand will be showing off all its latest contributions for its leading customers:

- **Manufacture of turbine combustion casings** using EDM, thanks to the highest-powered generator on the market with up to 400 amps.

- Development of wire-cut machines especially designed for **fully-automated cutting of vertical rings**.

- **Wire-cut EDM for making firtrees for turbines for the aeronautical industry.** A perfect solution both for large parts on large machines such as

the AV100 model, with its high precision and cutting speed, and standard machines that allow inclined cuts and angled cuts, thanks to the incorporation of a twin rotary shaft. However, speed isn't the only important factor for optimal execution of these high-precision parts. ONA's wire-cut EDM machines include a probe, which together with the script programming software, ensure exceptional geometric accuracy and total control of part positioning. In addition, ONA has incorporated the latest digital advances into our machines thanks to the Technology 4.0. of its Smart Connect platform, making it possible to monitor all manufacturing parameters and maintain total traceability throughout the manufacturing process.

- **OGV developed jointly with the Advanced Aeronautics Manufacturing Centre (CFAA).** >>



<< Wire-cut EDM for making firtrees for turbines for the aeronautical industry.

ONA Smart Connect: Industry 4.0

EMO is one of the top events for Industry 4.0, and ONA will be showcasing all the advances in its production processes:



Monitoring of machines in different facilities and remote control over a networked connection.



Teleservice. Technicians can be kept fully informed with the new cameras installed which allow them to focus on the incident. The result is fast and error-free resolution of the problem.



Information storage and data analysis.



Traceability.



Real-time information on equipment performance

A comprehensive service which ONA offers its customers, always at the forefront of technology, to take the lead in digitization and automation.



Overall Equipment Effectiveness.

*based on key clients records.

World leadership

With over 65 years' experience working in EDM, ONA is uniquely placed to be a trusted partner. Focusing individually on each customer, the company establishes long-term partnerships providing advice throughout the process to ensure maximum performance from every machine installed. ONA is constantly innovating to create more productive, profitable and robust machines. All its machines are entirely manufactured in Europe with high-range components from leading European brands. It also has a customer service network with highly qualified staff to give a fast and personalised response.

Its excellence in every job is accredited by its customers, who have given its units a **98% score in Overall Equipment Effectiveness**. The company also invests continuously in research into new cleaner production processes, more respectful with the surroundings, as part of its commitment to the environment.

A LOOK TO THE PAST

\ ONA from 1960- 1990

ONA EDM's commitment to innovation and design make it a major player in the industry



ONA WORKERS IN 1965

ONA achieved a lot in 30 years, from its first tentative steps into international markets in the 1960s to the development of its revolutionary eco-filter, one of the company's main competitive advantages, patented in 1986. Over three decades, ONA's R&D department played a crucial role in its path to technological leadership. During this period, ONA launched its first wire-cut EDM machine and attended the trade fair in Hannover, showcasing the first exclusive numerical control for die-sink machines. These technological improvements, born out of its commitment to innovation and research, helped strengthen the firm's leadership in the industry.

1960s: Overseas expansion

After the early years, when ONA laid the foundations to become an industry leader, developing its first die-sink EDM model, at the start of the 1960s, **the firm began to export onto overseas markets**— first to nearby markets such as France and Italy, and then further afield, expanding its market into South America with which it shares the same language and culture. France and Italy soon became strategically important for the company and today Italy is ONA's largest export market. ONA's EDM machines are now used in over 60 countries around the globe.

1970s: Launch of wire-cut EDM technology

In the early 1970s, a new system of EDM began to emerge in Europe, wire-cut EDM. In 1977, **ONA launched its first wire-cut EDM machine** (ONA Ebagoki), which it presented at the EMO, the World Machine Tool Expo in Hannover.

1980s: Technological autonomy and commitment to design

ONA is well aware that it is essential to invest in innovation to maintain leadership. In 1980, the firm created a research and development (R&D) department (which now employs over 150 people). From then on, all its machines were fitted with their own generators, entirely developed in house by the company. Also in 1980, **ONA made improvements to the overall design of its machines, creating its own very personal style** that set them apart from the conventional look common in the industry at the time.

The first major success of the firm's commitment to R&D was presented in Hannover **in 1981, when ONA launched the world's first numerical control designed exclusively for die-sink EDM machining**. And it became the sensation of the fair when it unveiled a completely new look. >>



ONA AT EMO EXHIBITION IN 1985

The success continued, with the R&D department bringing the company new triumphs. **In 1985, ONA developed its new range of large machines with portal architecture**. With customers needing to manufacture ever larger parts, each with its own particular requirements, increasingly flexible machines were needed that could be easily adapted to specific needs. Since then, ONA has taken the lead over its competitors for its capacity to develop individualized solutions tailored to each customer's needs.

In the last half of the decade, ONA had another major technological breakthrough. **In 1986, the company patented its**

revolutionary ecological filter, for use in wire-cut EDM machines. It was the world's first 100% ecological filter and became one the great successes stories of the firm's R&D department. The new filtering system could eliminate EDM waste without contaminating any other type of material. And because the filter element never needed replacing, machines could be operated non-stop, optimizing the production process. The eco-filter turned ONA EDM into an industry leader, attracting major new customers such as the American multinational, General Electric, the world's largest user of ONA EDM's Aquaprima filter.

\ In 1986, the company patented its revolutionary ecological filter



\ In 1981, when ONA launched the world's first numerical control designed exclusively for die-sink EDM machining



ONA AT EMO EXHIBITION IN 1977



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