



**GA Drilling**



Leader in Bringing 21<sup>st</sup> Century Technology to the Drilling Market

## Our Mission

- To combine unique knowledge, expertise and leadership skills to create a ground-breaking plasma technology
- To ensure all our customers derive real business benefit from our sustainable technology

## Four Key Themes of our Strategy

- Excellent people and capabilities
- PLASMABIT solution for oil and gas well abandonment and intervention market
- World class research and development projects
- Diversified portfolio of advanced technology technology services for sustainable clean energy applications



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GA Drilling  
proud member of



InnoEnergy  
Knowledge Innovation Community

PLASMABIT® technology is validated by European Energy Industry leaders associated in InnoEnergy



**Igor Kocis**  
Chairman

#### Chairman's Biography

Igor is a co-founder of GA Drilling and brings more than 20 years of engineering, business development and managerial leadership experience to the company. Before that Igor built from scratch to 50 employees a technological company ARDACO and managed it as Chairman and CEO for 7 years. Igor was recently selected as one of the TOP 100 innovators in Central and Eastern Europe.

## Chairman's Message

„Many key industry sectors have experienced radical technological and operational changes in recent years. However, the geological based hydrocarbon and energy acquisition industries have yet to experience significant application of disruptive technologies. These sectors are now facing increasing challenges and there is a urgent need for “game changing” technology applications.

For example, such innovations are needed for the decommissioning of depleted wells or for providing access to the new energy resources within the deep geothermal layers.

Our company is founded on the desire to discover, develop and bring to the market new technologies that will deliver a step change in efficiency and improve HSEQ performance. As an example our PLASMABIT technology creates a fundamentally new way of material disruption with a sophisticated combination of proven physical, chemical


and mechanical procedures. Several global oil & gas companies have recognised the incredible potential of this technology shift and have joined our journey to a market ready product.

The first applications of PLASMABIT technology are being prepared for testing in real conditions, in the field with our partners. Customers and partners of GA Drilling are together creating a decisive shift in the upstream industry. This will enable them to be the first to improve procedures and processes as well as the reliability, profitability and safety of their operations.

We are passionate about our vision and we are proud of the creativity and dynamics of our multidisciplinary team of 110+ professionals. We have created a company with a long term future and are ready for meaningful mutually beneficial cooperation for our partners as well as for clean and sustainable energy for mankind.

## Our People



 110+ employees

 20+ PhDs

 60+ master engineers

## Founders



**Dusan Kocis**  
Managing Partner

Dusan is a co-founder of GA Drilling. As the Managing Partner, he is responsible for company operations, finance, human resources and strategic planning. He has almost 20 years of experience in R&D and business development, being the main driving force of the equity investment rounds and financing in the company.



**Tomas Kristofc**  
Chief Technology Officer

Tomas is a co-founder of GA Drilling. As the Chief Technology Officer, he is responsible for Technology and Product Development. With more than 20 years of experience in R&D management he is specialized in process automation, electronics and embedded system communication for preserving reliability in harsh environments.



**Ivan Kocis**  
Chief Scientist

Ivan is a co-founder of GA Drilling. He also acts as the Chief Scientist bringing new ideas for long-term development and is expert adviser for R&D team. He is engineering and industry veteran with 40 years of experience in leading positions with large organisations and successful start-ups. Acts a member of scientific bodies of EU.

## Our Leadership Team



**Karl Farrow**  
Commercial Director

Karl has over 30 years' experience in Oil and Gas asset management, decommissioning, commercial contract management, joint operating agreements, joint venture contracts, project funding, IPO's, mergers and acquisitions within the International Energy Sector.



**Irving Marzano**  
Field Operations Manager

Irving is creating the foundations to start the field tests of our hi-tech tools and prepare GA Drilling to market entry with an efficient, environmental and cost saving service. He worked for the leading multinational oil companies Schlumberger and PDVSA for more than 20 years, as well as in R&D Centre in the UK as a field test coordinator worldwide.



**Milan Pavlovic**  
New Product Development Manager

Milan is in charge of commercialization of GA Drilling products. He has 20 years of experience in new product development, technology and service development of bits, downhole drilling and measurement tools. Formerly he participated in Schlumberger's top drilling and measurements projects and worked in NPD of turbomachinery.



**Miroslav Zimmermann**  
Quality & HSE Manager

Miroslav leads a team responsible for designing processes, as well as for setting and supervision over HSE standards. Formerly he worked in an international nuclear company, being responsible for part of commissioning of power plant, its control systems, organisation and admin processes. He led the Atomic Questions Working Group of the European Council.



**Peter Moravek**  
Finance Manager

Peter has worked in finance for more than 15 years. He was a part of the successful growth of one of the Slovakia's largest one-way packaging companies and managed its sale, transformation, and its merger with Bunzl, one of the world's leaders in one-way packaging materials supply.



**Andrea Salingova**  
Human Resources Manager

Andrea comes from bank business, where she managed within the human resources area nearly for a decade. She has rich experience with learning and development agenda, talent management, leadership, as well as with cooperation with universities. She postgraduated at Universität Bielefeld in Germany and at the Slovak Academy of Science.

## Our Advisory Board



### Nigel Jenkins

#### Business Growth

Nigel's recent engagement was leading Decom North Sea to become the representative body for the UKCS decommissioning industry. He brings board level experience from a variety of sectors, including onshore and offshore oil, gas and process, nuclear, environmental, and manufacturing.



### Gerald Grohmann

#### Business Strategy

Gerald has been Chairman of the Executive Board and President of Schoeller-Bleckmann Oilfield Equipment AG, the global market leader in high-precision components and leading supplier of oilfield equipment. The main focus is on drilling string components and hi-tech downhole tools for drilling and completing directional and horizontal wells.



### Ted Halstead

#### Geothermal Energy Division

American climate expert and policy maker, co-founder and CEO of the Climate Leadership Council, an international research and advocacy organization for climate solutions. He is a co-author of the plan called "The Conservative Case for Carbon Dividends", with respected USA politicians and business leaders.



### Jules Shoenmakers

#### Well P&A Expertise

Recognised industry leader with 30 years' experience. Long-time Shell Global Principal Expertise Holder for Well abandonment campaigns, designs and standards. With such deep knowledge and an extensive C level network, Jules connects us with end users, service partners and regulators, ensuring the success of our technology.



### Mikhail Gelfgat

#### Technology Development

Mikhail has 50-years work experience in the petroleum industry. He has contributed a lot in realisation of scientific ultra-deep wells drilling projects, development of retractable drill bits and hard rock coring technology. Mikhail has published more than 50 papers and has tens of inventions.



### Iain Pittman

#### Product Development

Iain specialises in engineering design primarily focused on abandonment and re-abandonment operations supporting Field Operations, New Product Development and Technical Sales in GA. He is also engaged as an instructor for well abandonment across the well engineering and C&WI disciplines.

## Our Values



### TRUST

Giving and receiving trust is fundamental for us.



### CREATIVITY

We always think big and seek for ways which others don't.



### EXCEPTIONALITY

We are the best in things that really matter.



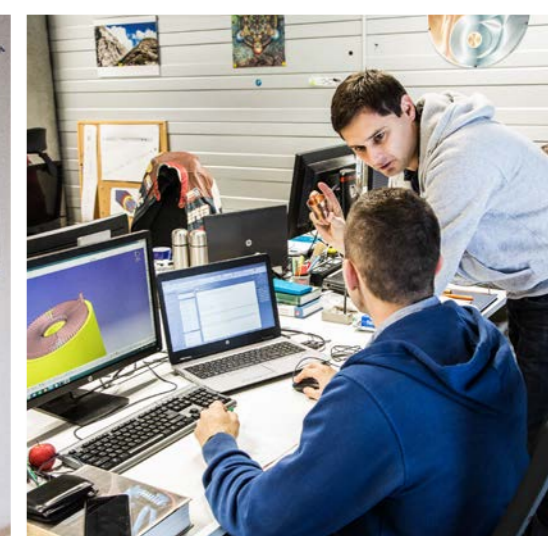
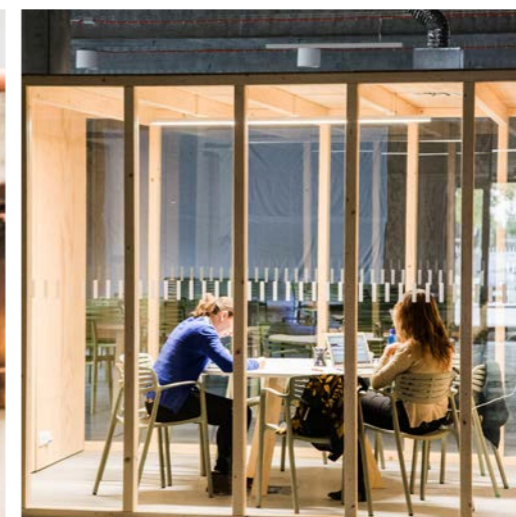
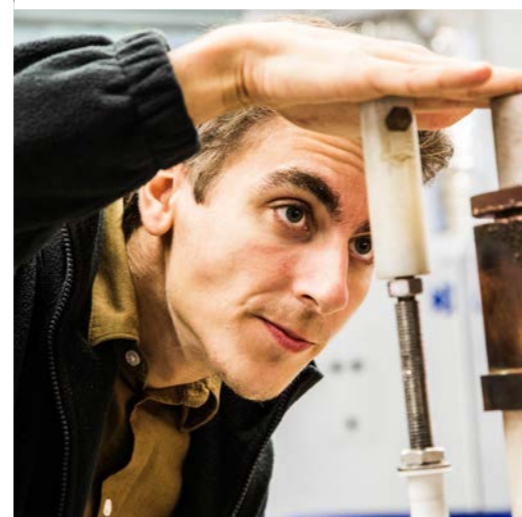
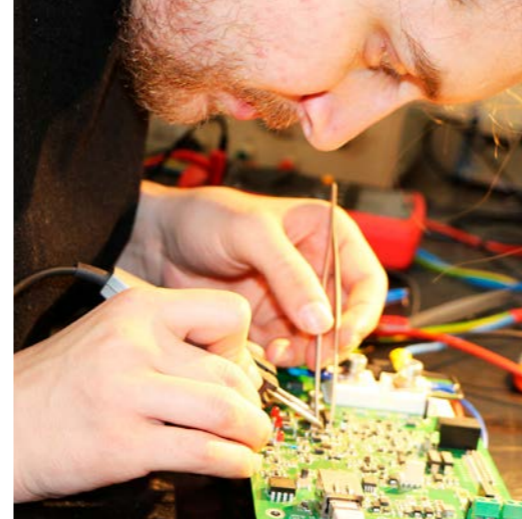
### COURAGE

Striving for success, learning from failures. Getting through anything.



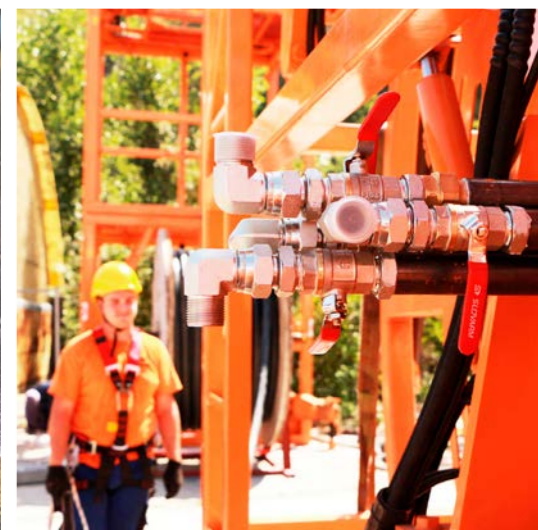
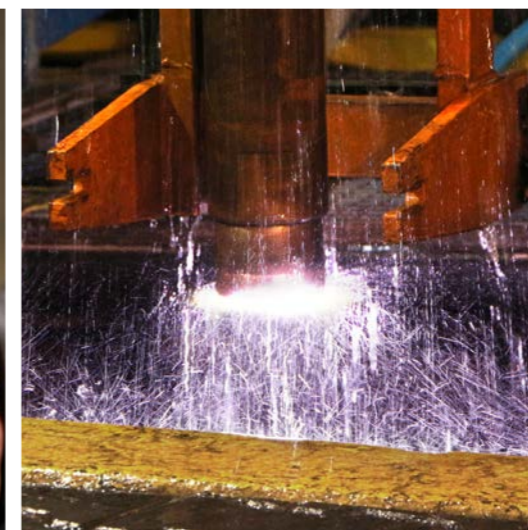
### OWNERSHIP

Personal accountability for own actions and results.



## Company Achievements

- The Company is operating in Slovakia, United Kingdom, USA, and United Arab Emirates
- 9 years in the R&D for drilling, well construction and intervention; certified with EN ISO 9001:2015 and EN ISO 14001:2015
- Our intellectual property consists of 6 Granted Patents, 3 US Patent Applications, 4 EU Patent Applications, 6 priority Slovak Patent Applications, 2 Industry Designs and 1 international registered trademark
- 20+ doctoral level employees, 60+ master level engineers
- Repeatedly ranked among the best European innovative companies and continuously supported by the European Union Framework Programs
- Cooperation with world leading universities and institutes
- Developing and commercializing the PLASMABIT technology
- The PLASMABIT Joint Industry Project set up in 2013 with major oil & gas operators and oilfield service companies
- The first ever plasma milling underwater
- The first ever plasma milling in high pressure and high temperature (HP/HT) environment
- The PLASMABIT technology currently in prototyping stage, first applications under preparation for onshore and offshore field tests in a short-time period
- Proven performance for continuous milling of oilfield tubular



# Our History

2008



- **GA Drilling formed as Geothermal Anywhere**
- Full focus on PLASMABIT drilling technology for geothermal applications

2009



- **First successful laboratory drilling completed**
- First public grant won with the total amount of over €2.5M contracted

2010



- GA Drilling opened a laboratory in the premises of the Slovak Academy of Sciences
- **Demonstration of the 1<sup>st</sup> generation of PLASMABIT drilling technology**

2011



- GA Drilling certified to the ISO 9001:2008
- **Additional large infrastructure** grant projects won in fierce competition

2012



- First PLASMABIT test pre-prototype **successfully accomplished**
- GA Drilling among the best 25 European high-tech companies within the European Venture Contest

2013



- Joint project with Weatherford
- Rebranding to GA Drilling
- **Joint Industry Project with major oil & gas companies**
- Investment and cooperation agreement with Schoeller-Bleckmann Oilfield Equipment

2014



- **Drilling and milling testing in different environments**
- GA Drilling ranked as one of the most dynamic technological innovators within the CEE region

2015



- Multidisciplinary R&D team strengthening
- GA Drilling at EXPO Milan as a technology innovator
- **The first ever plasma milling underwater**
- **The first ever plasma milling in HP/HT environment**

2016



- **Proof of the concept in high pressure environment - at 42 MPa**
- **Win the investment backing from group of financial investors for PLASMABIT prototype development**
- PLASMABIT presented at the EU Council Residence in Brussels

2017



- **Statement of Feasibility for PLASMABIT milling** by the world's leading O&G certification company DNV GL
- Proven performance for **continuous milling of oilfield tubular**



## Technology PLASMABIT is Real Ground-breaker

- A high power rotating electric arc that reaches the temperature of the sun (6,000°C), yet it is safe to operate
- PLASMABIT drilling/milling tool disintegrates any materials – rock, steel, cement – without any physical contact
- PLASMABIT performs exceptionally well in hard rock, resulting in an order of magnitude greater rate of penetration
- Unlike conventional drilling tools, our bit has no moving parts, which means there is minimal wear and tear
- The tool enables a real-time data acquisition with an immediate feedback during the whole process
- Accredited for offshore decommissioning by DNV GL, the leading global oil and gas accreditation organization
- Design of core technology systems completed and protected by patents in 10 countries of the world



## PLASMABIT Ultra Deep Drilling Application

Geothermal energy is the only renewable source of clean and baseload energy, available 24/7/365. It works regardless of weather conditions or the day-night cycle. It is so clean and compact that geothermal power plant could be built nearby cities.

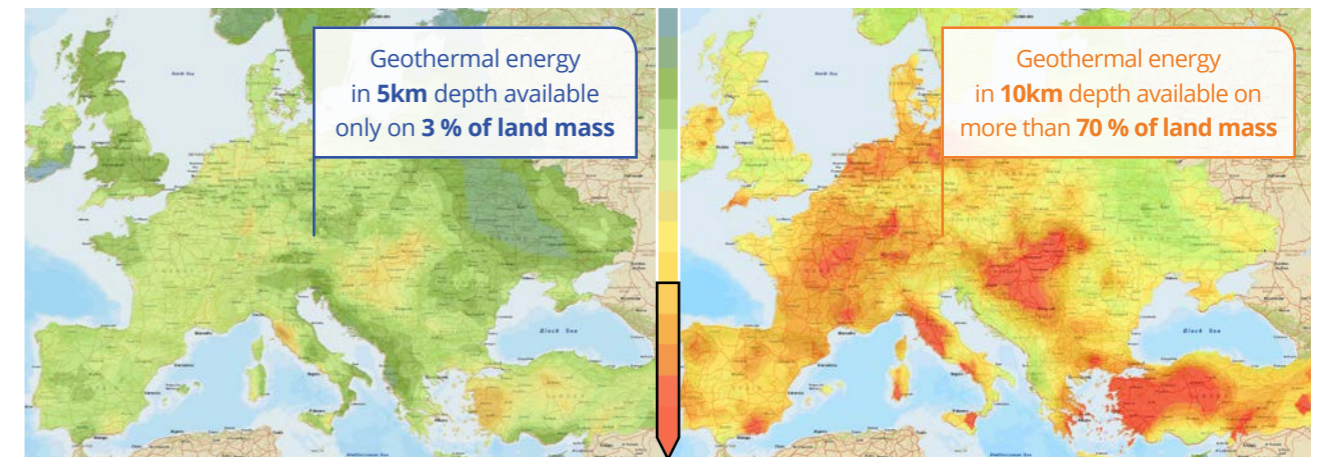
Despite its tremendous promise, geothermal power is held back by one overwhelming limitation: the cost of conventional drilling grows exponentially with depth, limiting the economic viability

of geothermal power to relatively shallow depths, available in only 3% of the populated world. PLASMABIT overcomes this by offering much faster drilling – at linear costs – to depths of up to 10km, unlocking clean, inexpensive, baseload power in 70% of the world.

PLASMABIT technology also significantly reduces the economic risk of geothermal exploration by tapping the constant heat available at greater depths, instead of searching for isolated pockets

of heat at shallow depths. PLASMABIT drilling to greater depths also means higher temperatures, making energy production considerably more efficient, which also reduces the cost of energy (LCOE).

The end result of revolutionary PLASMABIT drilling technology is a dramatic environmental and economic double-play: the most promising and abundant new source of clean energy is also the least expensive.



Enabling high power

## PLASMABIT Milling Application

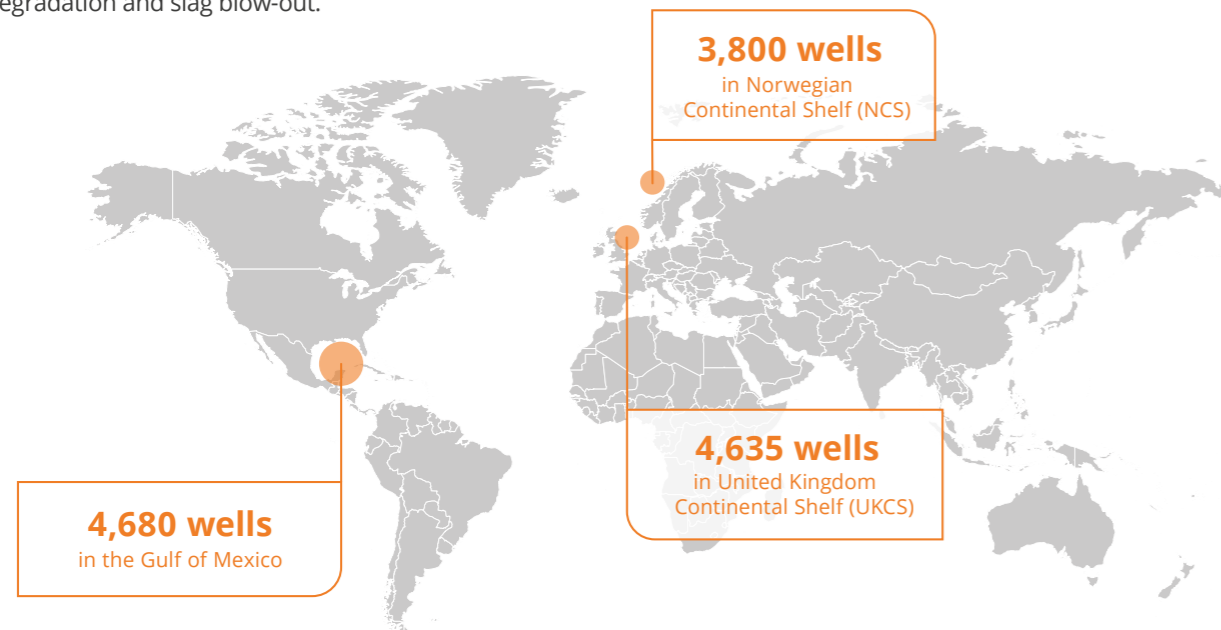
30 000 wells worldwide have to be decommissioned in the next 15 years. The operation is based on milling key sections of casing and production tubing, then plugged to create a safe environmental barrier.

Conventional approaches are slow, costly and environmentally damaging. PLASMABIT technology utilizes a high temperature plasma stream for rapid steel structural degradation and slag blow-out.

This reduces the time and cost to decommission each well by 35% to 50%.

Contactless plasma milling reduces energy need downhole and brings minimal wear and tear. It removes multistring well tubing as well as casing or control line, all at once. PLASMABIT technology with a rapid, efficient mobilization and deployment enables multiple wells closed in short time.

Besides well plug and abandonment, our technology can be more efficient and productive than traditional methods for various well intervention operations: slot recovery, side-tracking, pipe recovery, fishing and others. PLASMABIT technology brings significant cost reduction and HSE improvements.



## PLASMABIT Spin-off Applications

### Reservoir Stimulation

Plasma technology can generate a wide area of electro pulses utilizing short high-energy plasma peaks of megawatts power. The process leads to the generation of a pressure wave with reduced water consumption. This eco-friendly method can be used for drilling to allow the extraction of shale gas, tight gas, tight oil and coal bed methane.

### Mining and Tunneling

Today's high cost valuation of megaprojects is closely linked

to the productivity of tunnel boring machines (TBM's) and their availability to provide real time data. Plasma technology uses thermal rock weakening. In combination with high energy pulses it may induce new cracks within intact rock material. It changes hard-rocks to soft-rocks with all the related benefits. Application is designed for mining and tunneling market.

### Raw materials

Raw materials demand is booming due to proliferation of batteries and other new products.

PLASMABIT tool provides Real Time Data Acquisition while drilling with on-line spectroscopy and unique 3D mapping for more efficient mineral exploration.

### Water desalination and purification

By accessing greater heat at greater depths with PLASMABIT technology, ultra-deep geothermal can provide excess heat for efficient water desalination and purification. This can help meet the ever-growing demand for drinking water in developing countries.



# Getting through Anything



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