BWT Service

Best World Technologies

INTERNATIONAL INTEGRATOR OF ADVANCED RUSSIAN WELL COMPLETION TECHNOLOGIES

BWT Service

WE USE THE BEST RUSSIAN DEVELOPMENTS TO TRANSFORM THE POTENTIAL OF HYDROCARBON RESERVOIRS INTO REAL PRODUCTION.

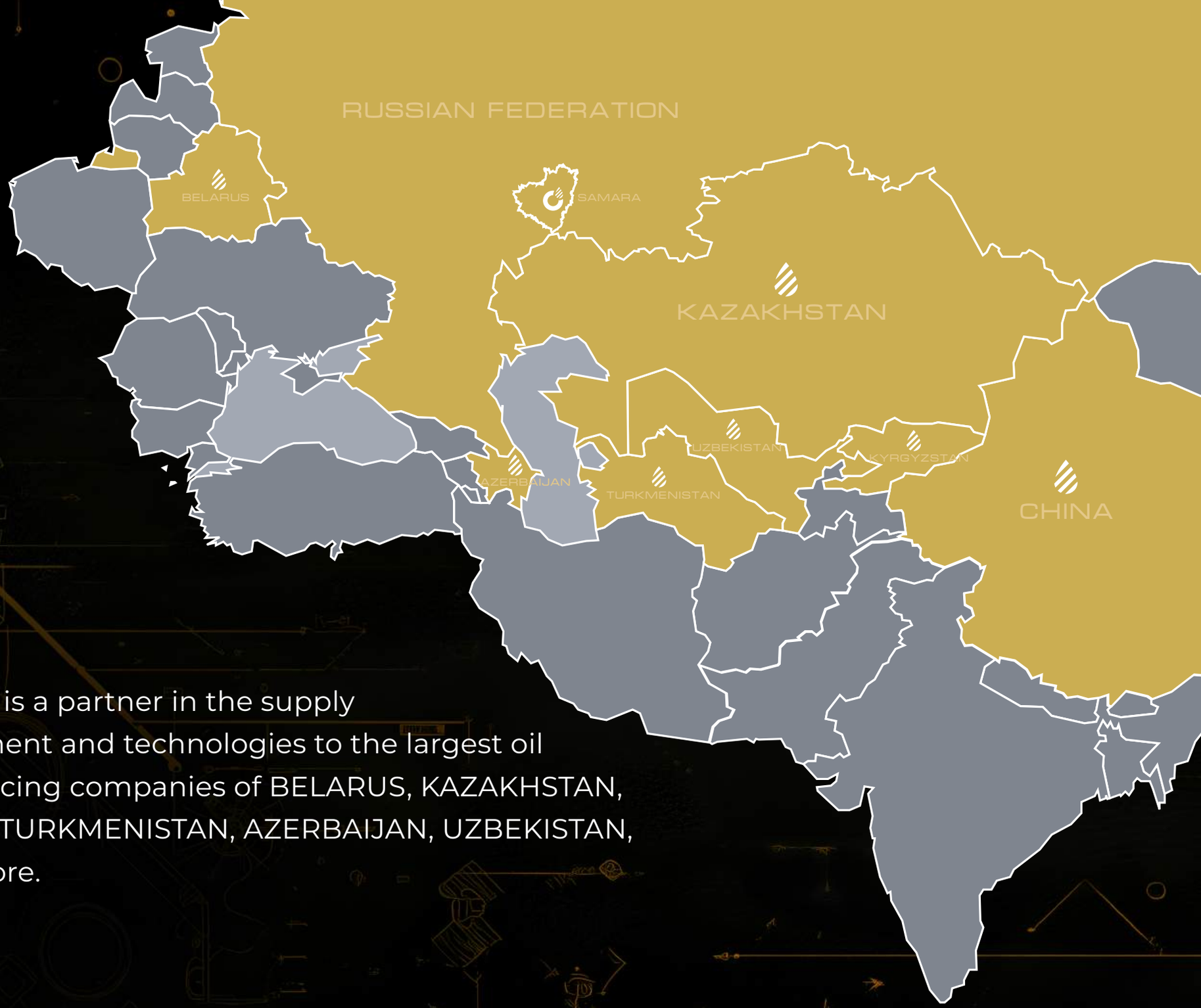
BWT-SERVICE specializes in the integration of innovative Russian technologies and equipment for well completion and comprehensive reservoir intervention, from delivery to full onsite implementation.

THE COMPANY PROVIDES NOT JUST DELIVERY,
BUT FULL ADAPTATION OF SOLUTIONS
TO THE SPECIFICS OF THE FIELDS,

THIS ALLOWS OUR CLIENTS TO:

- optimize operational and financial resources;
- improve production efficiency;
- achieve sustainable growth in oil and gas recovery.

BWT Service



BWT-SERVICE is a partner in the supply of well equipment and technologies to the largest oil and gas producing companies of BELARUS, KAZAKHSTAN, KYRGYZSTAN, TURKMENISTAN, AZERBAIJAN, UZBEKISTAN, CHINA and more.

BWT Service

Best World Technologies

ADVANCED TECHNOLOGICAL SOLUTIONS OFF THE SHELF

BWT Service

PLUG&PERF

ONE OF THE MOST PROMISING METHODS OF MULTISTAGE HYDRAULIC FRACTURING.

The technique combines the installation of insulating plugs and cumulative perforation in one run, which

- significantly reduces operation time;
- improves overall well completion efficiency.

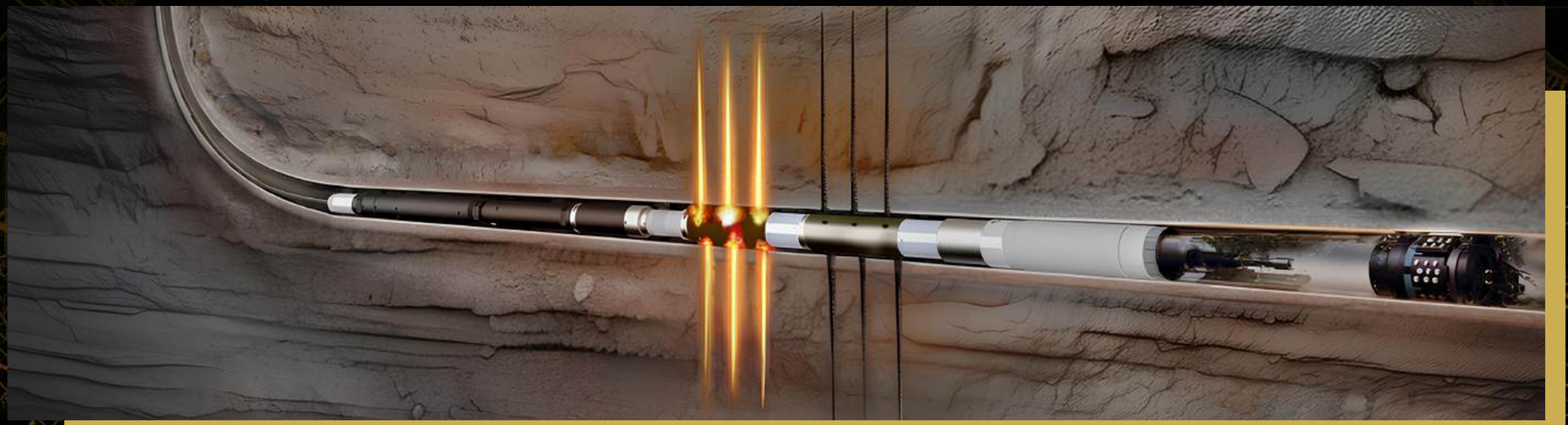
BWT Service

THE KEY FEATURE of the technology is the addressable initiation of perforators, allowing to control the process of isolating and opening up target intervals of the reservoir.

THIS EQUIPMENT WAS USED TO COMPLETE:

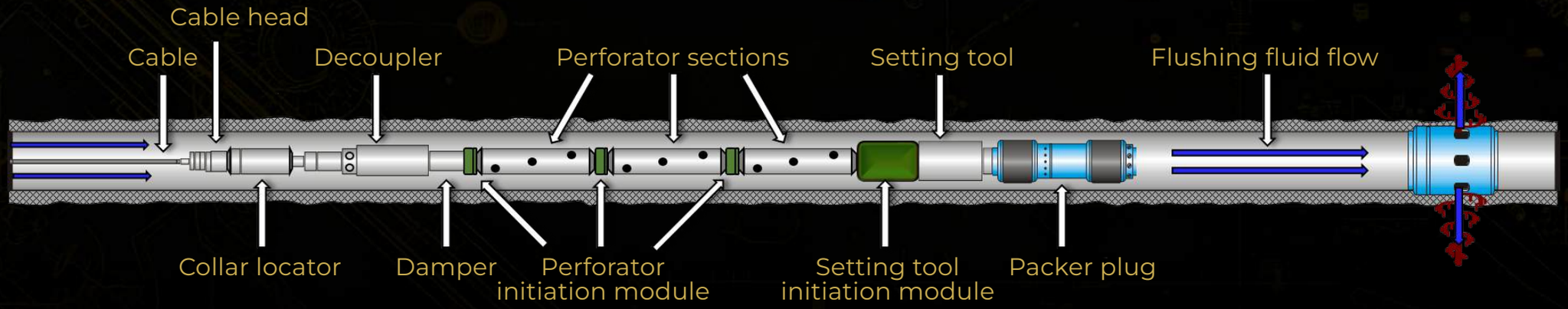
Multistage hydraulic fracturing on **150** wells

4500 clusters



OPERATING PRINCIPLE:

Perforation of several intervals and installation of a packer plug in one trip without discharging the well results in minimizing downtime and increasing overall work efficiency.



MOVING-IN PROCESS:

lowering the complete internal-flush assembly into a borehole
on a geophysical cable to a specified depth:

- **IN A VERTICAL AND/OR INCLINED PART:**
  under its own weight;

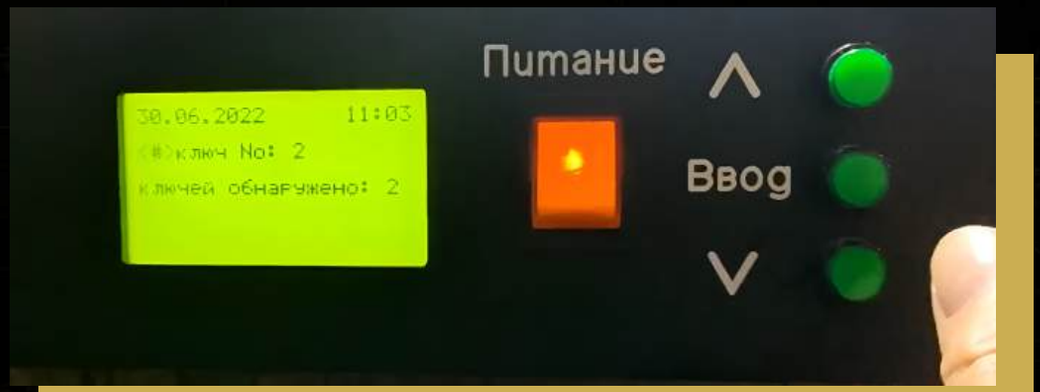
- **IN A HORIZONTAL PART:**
  using hydraulic fracturing pumps to ensure the movement of the assembly
  by the action of the fluid flow.

PROCESS CYCLICITY

after completion of the hydraulic fracturing operation on one interval, the layout moves to the next target area. The “processing – moving” cycle is repeated until all planned zones have been processed according to the work plan.

TARGET INITIATION SYSTEM:

allows for precise, selective opening of several perforation intervals per run and installing the packer plug without lifting layout on the surface, which significantly reduces the time required for multi-stage hydraulic fracturing.



KEY BENEFITS OF THE SUPPLIED PLUG&PERF ASSEMBLY:

HIGH SPEED:

average preparation time for one stage of hydraulic fracturing (installation of packer plug and perforation) is **4–6 HOURS** for horizontal wells **up to 6000 m long.**

MITIGATION OF RISKS:

collar locator and target initiation system eliminate the human factor and ensure precise operations flow according to the plan.

KEY BENEFITS OF THE SUPPLIED PLUG&PERF ASSEMBLY:

APPLICATION IN COMPLEX CONDITIONS:

possibility of using in complex geological and technical conditions: at abnormally high reservoir pressure with wellhead pressure control devices **at 100 MPa** and at high reservoir temperature **up to 150°C.**

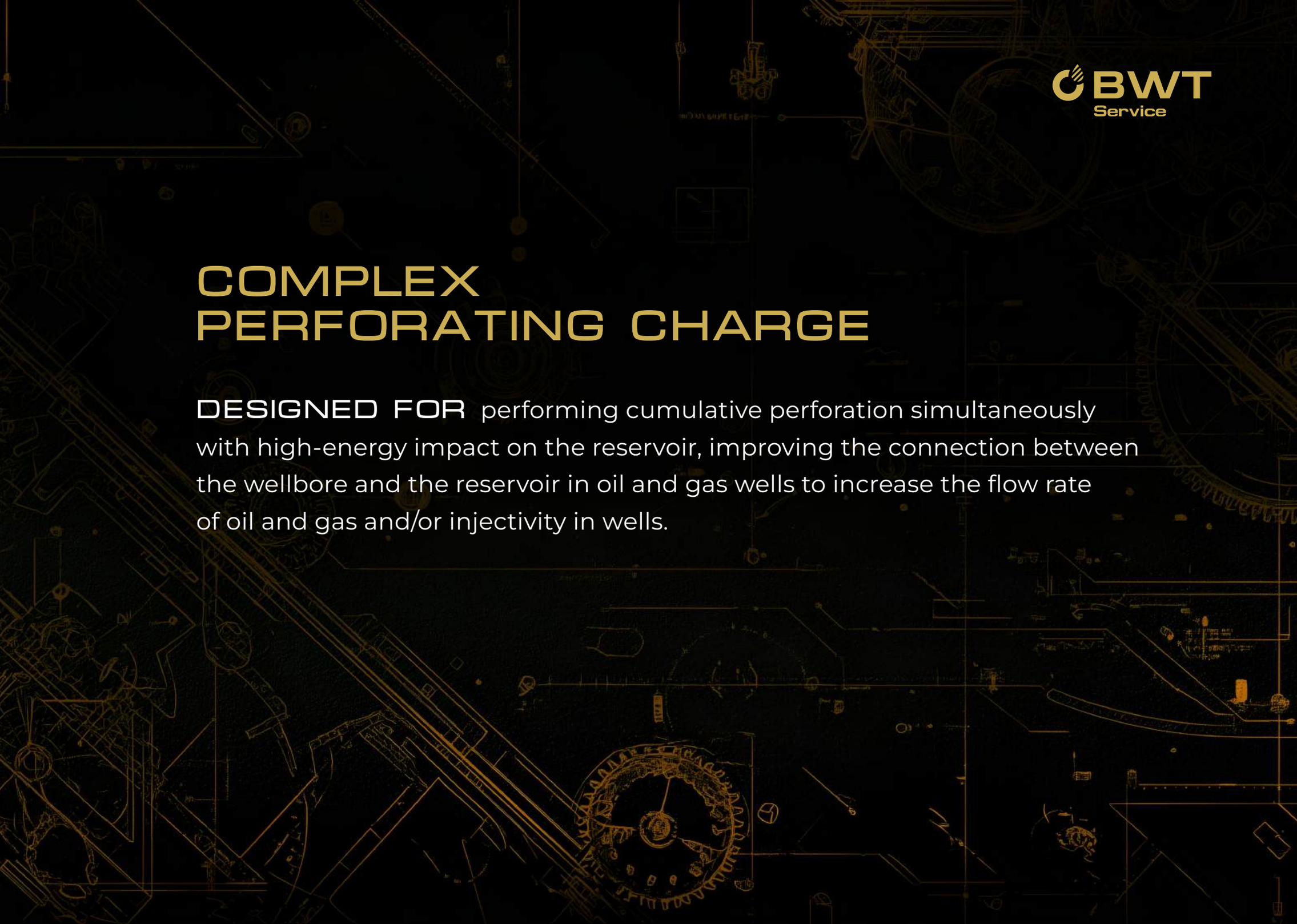
FLEXIBILITY:

possibility of using in production columns with the diameters of **114 mm/140 mm/146 mm,** including behind-the-casing cementing. Adjustment to any column diameter and any geological conditions is possible.

BWT Service

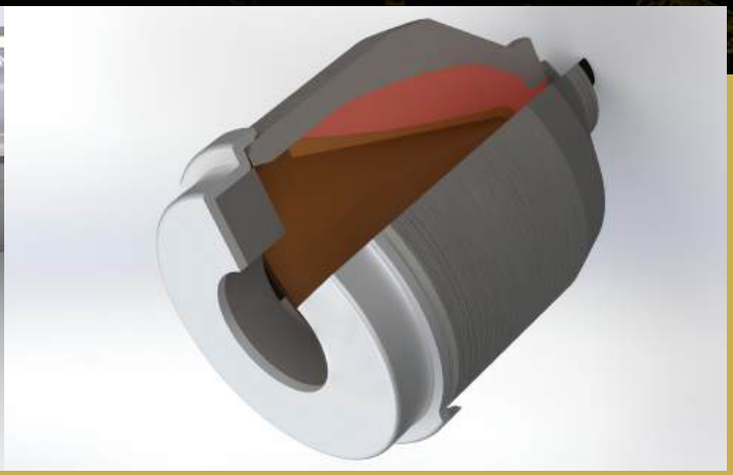
COMPLEX PERFORATING CHARGE

DESIGNED FOR performing cumulative perforation simultaneously with high-energy impact on the reservoir, improving the connection between the wellbore and the reservoir in oil and gas wells to increase the flow rate of oil and gas and/or injectivity in wells.



COMPLEX PERFORATING CHARGE

CONSISTS OF a standard shaped charge and a gas-generating charge containing a high-energy explosion cartridge. Installed in a standard perforation system.



BWT Service

OPERATING PRINCIPLE:

A charged perforator is lowered into the wellbore on cable or tubing.
The perforator is initiated at a predetermined interval. After the cumulative jet penetrates the channel in the casing and reservoir, a pressure pulse from the gas-generating charge impacts the channel walls, creating an additional network of fractures, thereby increasing the quality of secondary opening.

KEY BENEFITS OF THE COMPLEX PERFORATING CHARGE:

PERFORATION AND INFLOW STIMULATION IN ONE OPERATION:

combining the creation of perforation channels with the increase in reservoir permeability results in reduction of time and costs without compromising safety.

INCREASING THE QUALITY OF OPENING THE PRODUCTION LAYERS:

uniform opening of horizons, increase in the contact area of the well and the layer, effective access to resources and reduction of risk of damaging the bottomhole zone.

KEY BENEFITS OF THE COMPLEX PERFORATING CHARGE:

DECREASING THE OPERATIONAL COSTS WITHOUT INCREASING THE RISKS:

reduction in the number of stages and downtime, reduction of labor costs while maintaining high level of safety.

WIDE AREA OF APPLICATION:

natural completion of wells, restoration perforation (restoration of the flow rate of existing wells), flooding of injection wells (maintaining reservoir pressure), preparation for hydraulic fracturing (increasing the efficiency of hydraulic fracturing).

BWT Service

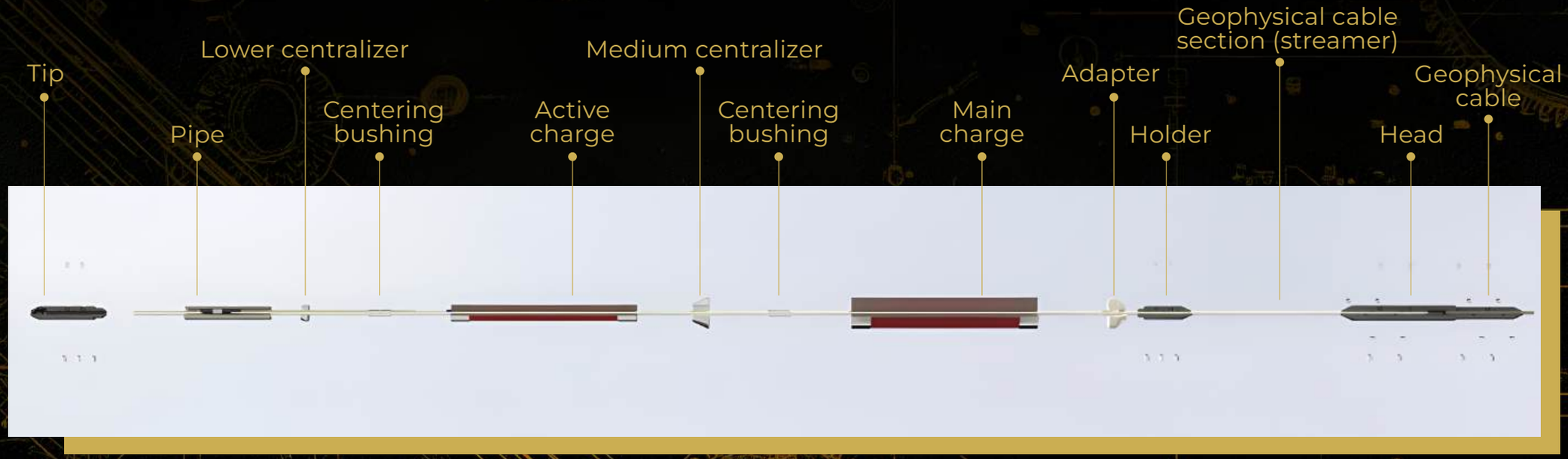
HIGH-ENERGY GAS-DYNAMIC RESERVOIR STIMULATION TECHNOLOGY

ENSURES intensification of well productivity by increasing the filtration-capacity properties of reservoir rock by means of hydrogasdynamic fracturing of the reservoir, the formation of a system of residual cracks and cleaning of the near-wellbore zone.

BWT Service

GENERATOR DESIGN

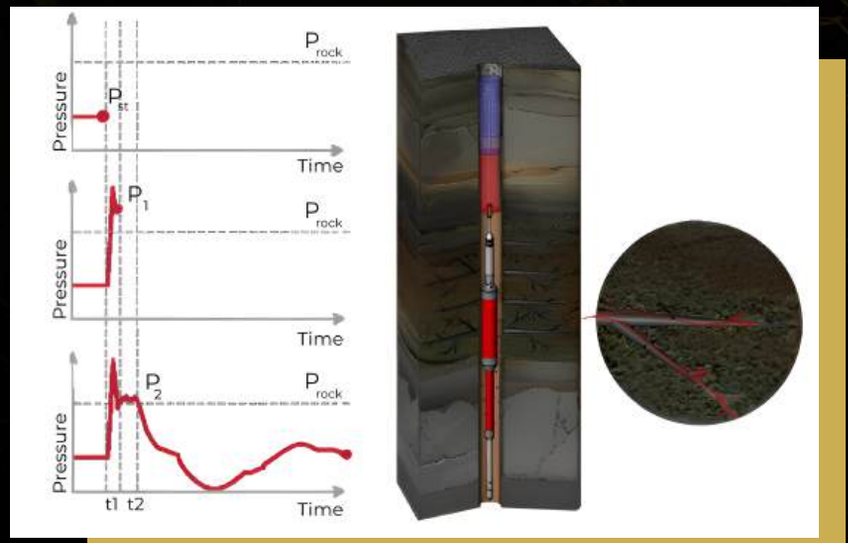
The generator is an assembly based on a geophysical cable. Active and main charges initiated by a detonating cord are attached to it. The electrical circuit is closed to an explosive cartridge in the lower tip, and the upper part of the generator is equipped with gas outlet and fastening elements.



OPERATING PRINCIPLE:

To create a hydrogasdynamic fracturing of the reservoir and form a system of residual cracks in the wellbore zone, the pressure created in the wellbore during combustion of solid fuel charges of the generator shall exceeded the rock pressure in accordance with calculations taking into account charge parameters, geological and technical characteristics of well, filling fluid and reservoir.

Two stages of processing allow to control the combustion of charges, the magnitude and duration of the exposure. As a result, the layer is subjected to mechanical, thermobaric and physicochemical effects.



P_{rock} – rock pressure;
P_1 – pressure produced by a gas bubble during combustion of ignition charges;

P_2 – pressure produced by a gas bubble during combustion of main charges;
P_{st} – hydrostatic pressure.

KEY BENEFITS OF THE HIGH-ENERGY GAS-DYNAMIC RESERVOIR STIMULATION TECHNOLOGY:

EFFICIENT IMPACT ON THE RESERVOIR:

- simultaneous effect of quasi-static and dynamic loads enhances the wedging action of liquid and gaseous combustion products;
- creation of an extensive system of residual cracks due to a combined effect (mechanical, thermobaric and physicochemical);
- reduction of skin factor.

KEY BENEFITS OF THE HIGH-ENERGY GAS-DYNAMIC RESERVOIR STIMULATION TECHNOLOGY:

ECONOMIC EFFICIENCY:

- high rates of increase in well productivity with minimal financial and time costs;
- cost optimization, as no special heavy equipment is needed;
- efficiency of work due to the mobility of geophysical parties.

KEY BENEFITS OF THE HIGH-ENERGY GAS-DYNAMIC RESERVOIR STIMULATION TECHNOLOGY:

SAFETY AND MITIGATION OF RISKS:

- minimal risk of behind-the-casing circulation;
- elimination of blast and brisant effects.

FLEXIBILITY AND INTEROPERABILITY:

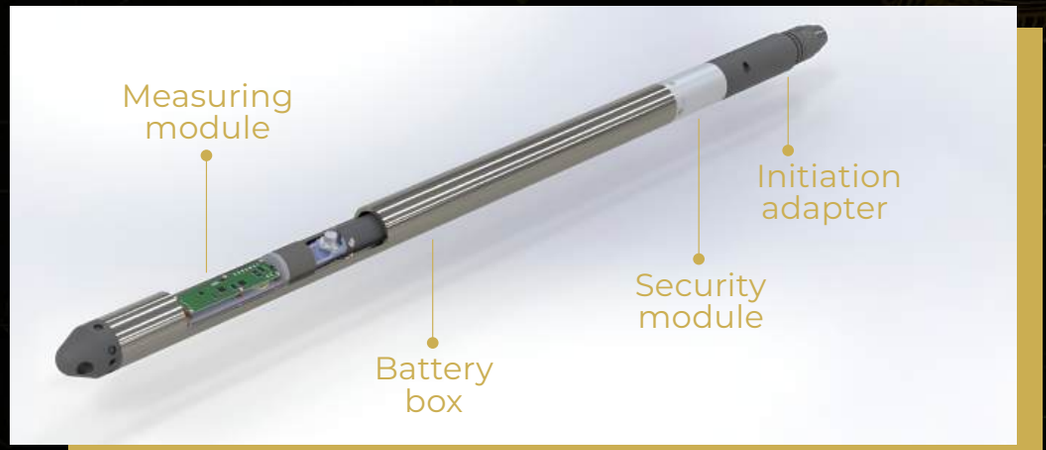
- obtaining data on the potential of productive reservoirs;
- pre-treatment before hydraulic fracturing;
- performing complex works with combustible oxidizing compounds before/ together with acid treatment.

INTELLIGENT INITIATION TECHNOLOGY

PROVIDES intelligent programming of the process of initiating the blasting and perforating equipment in the well.

REMOTE CONTROL MECHANISM:

Pressure pulses are generated on the surface and processed by a microprocessor-based initiating head.



KEY BENEFITS OF THE INTELLIGENT INITIATION TECHNOLOGY:

TECHNOLOGICAL:

- allows to carry out technological operations to create an optimal depression during opening of productive layers;
- exact initiation delay time;
- possibility to monitor the completed operations – operations log.

KEY BENEFITS OF THE INTELLIGENT INITIATION TECHNOLOGY:

ECONOMIC:

- separate initiation of two (or more) devices descended simultaneously reduces the number of descents;
- less requirements for descent parameters reduce the time required for operations;
- the possibility to combine several technologies ensures more cost-effective operations.

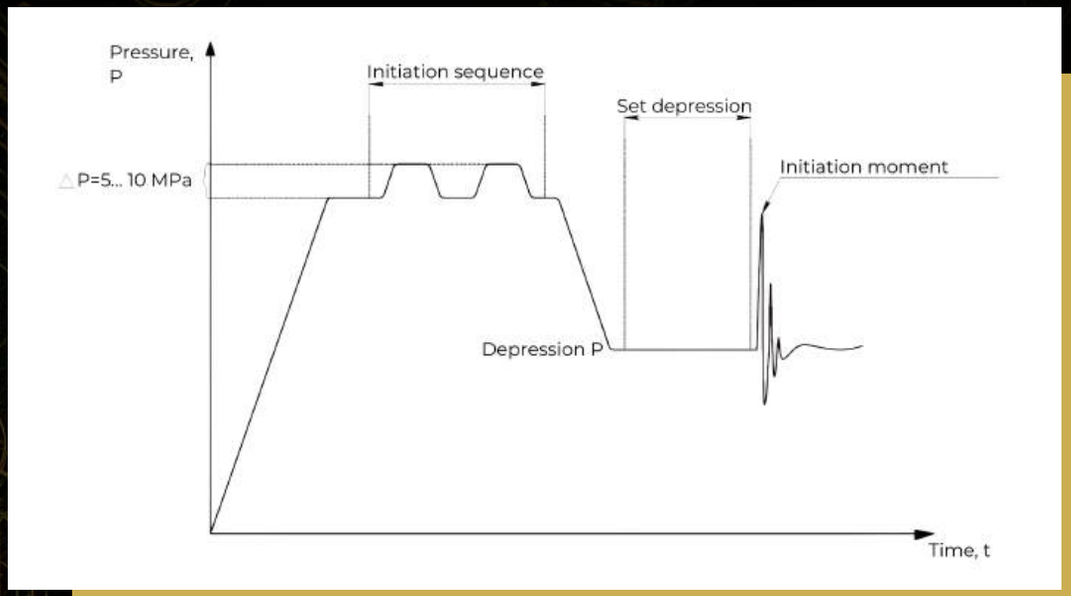
KEY BENEFITS OF THE INTELLIGENT INITIATION TECHNOLOGY:

SAFETY:

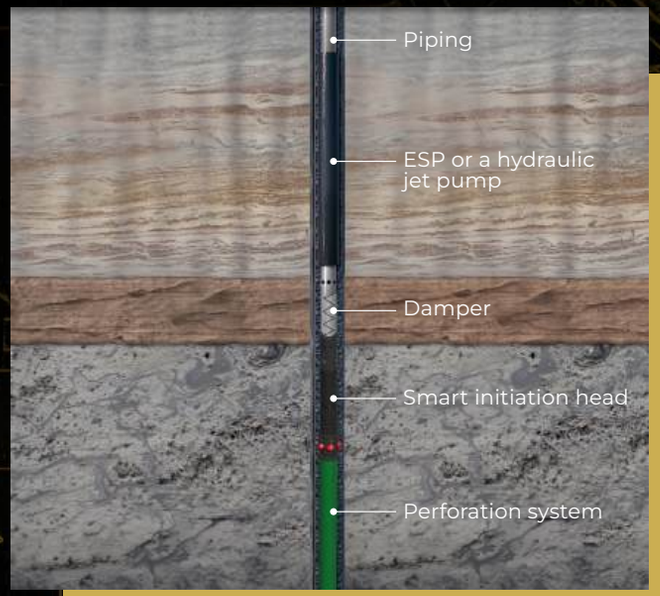
- the ability to cancel initiation at any time;
- no additional security measures required other than restrictions on the explosives used;
- immunity to electromagnetic interference, no radio silence mode required.

TECHNOLOGY OF PERFORATION ON DYNAMIC DEPRESSION WITH AN ESP

The technology ensures minimal impact on the formation during secondary opening using an intelligent head to initiate the assembly and subsequent development using an ESP.



Pressure chart for perforation using ESP and smart initiation head



KEY BENEFITS OF THE TECHNOLOGY OF PERFORATION ON DYNAMIC DEPRESSION

USING AN INTELLIGENT INITIATION HEAD,

FOLLOWED BY DEVELOPMENT USING AN ESP:

- joint lowering of the perforating system and technological equipment;
- perforation and start of development in one trip;
- the presence of a shock-absorbing safety system to protect process equipment;
- programming the intelligent initiation head to fire upon reaching the required level of depression;
- the ability to cancel initiation at any time;
- the ability to record data offline before and during perforation.

BLASTING AND PERFORATING EQUIPMENT

Wide range of shaped charges **(OVER 100 ITEMS)**
of the DP (DEEP PENETRATION), BH (BiG HOLE) and GH (GOOD HOLE) series
to address various production tasks.

DP SERIES

Penetration depth
up to 1879 mm

GH SERIES

Optimal characteristics
to prepare
a wellbore
to hydraulic
fracturing

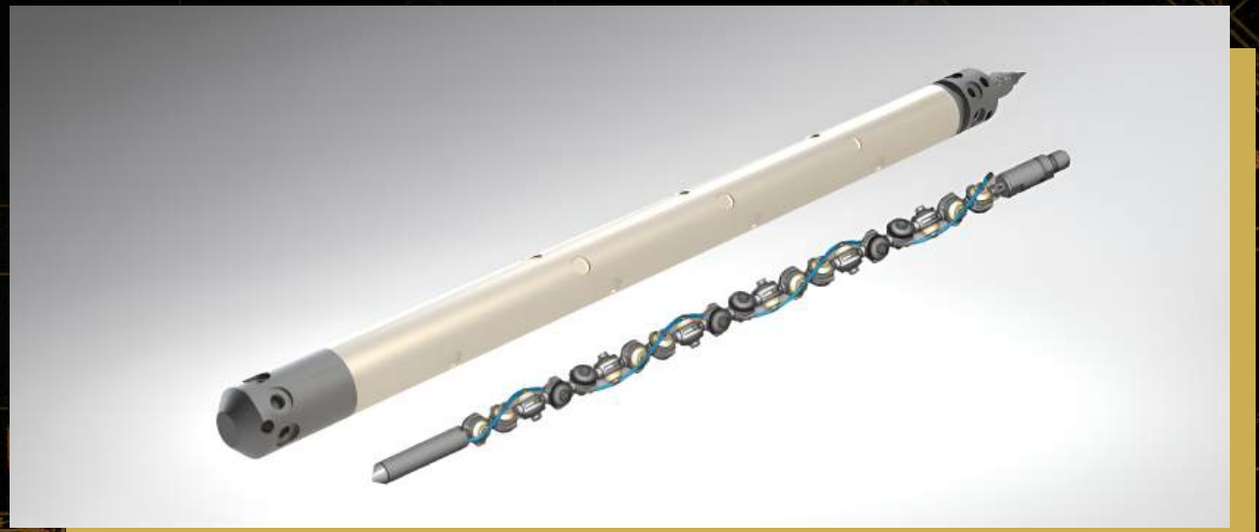
BH SERIES

Hole diameter
up to 25 mm

A special line of **HTHP** products to work in the conditions of abnormally high temperature and pressure.

BLASTING AND PERFORATING EQUIPMENT

A full range of perforating systems in caseless and cased versions of various sizes with a diameter **from 38 mm to 178 mm** with the possibility of lowering on a geophysical cable, tubing, coiled tubing and the possibility of combining cumulative charges of different types in one case for the effective secondary opening of productive layers and solving various production tasks.



BWT
Service
Best
World
Technologies

www.bwt-service.ru/en/