



DRILLING TOOLS



Drilling Equipment & Technologies



Integra Group of Companies

2014



2013



1963


VNIIBT
Drilling Tools Ltd

was established in **2003** on the base of the Perm Branch of the Russian Research Institute of Drilling Technologies (VNIIBT) founded on **November 26, 1963**

1966: First time in the world developed and tested downhole positive displacement motor (PDM) with multi-lobe power section.

1979: Commercial manufacturing of geared turbodrills started. Drilling depth record was established in 1983 when Kola superdeep well was drilled using geared turbodrill.

1980-1984: during this period 4 licenses were sold to Drillex company transferring PDM technology.

Since **2005** we are incorporated into Integra Group of Companies.

Under brand name

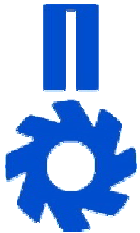


our products present in the international oil & gas market.

DRILLING TOOLS



VNIIBT-Drilling Tools Ltd., Perm city – positive displacement drilling motors, turbodrills, geared turbodrills, progressive cavity pumps, drilling jars, spare parts and components



Pavlovsky machine-building plant, Pavlovsky town, Perm Region – positive displacement drilling motors, turbodrills, geared turbodrills, spare parts and components



VNIIBT-Drilling Tools Ltd., Kotovo branch, Kotovo town, Volgograd Region - packers, fishing tools, coring equipment, casing and drill string components, sidetracking tools , absorbers, drilling jars

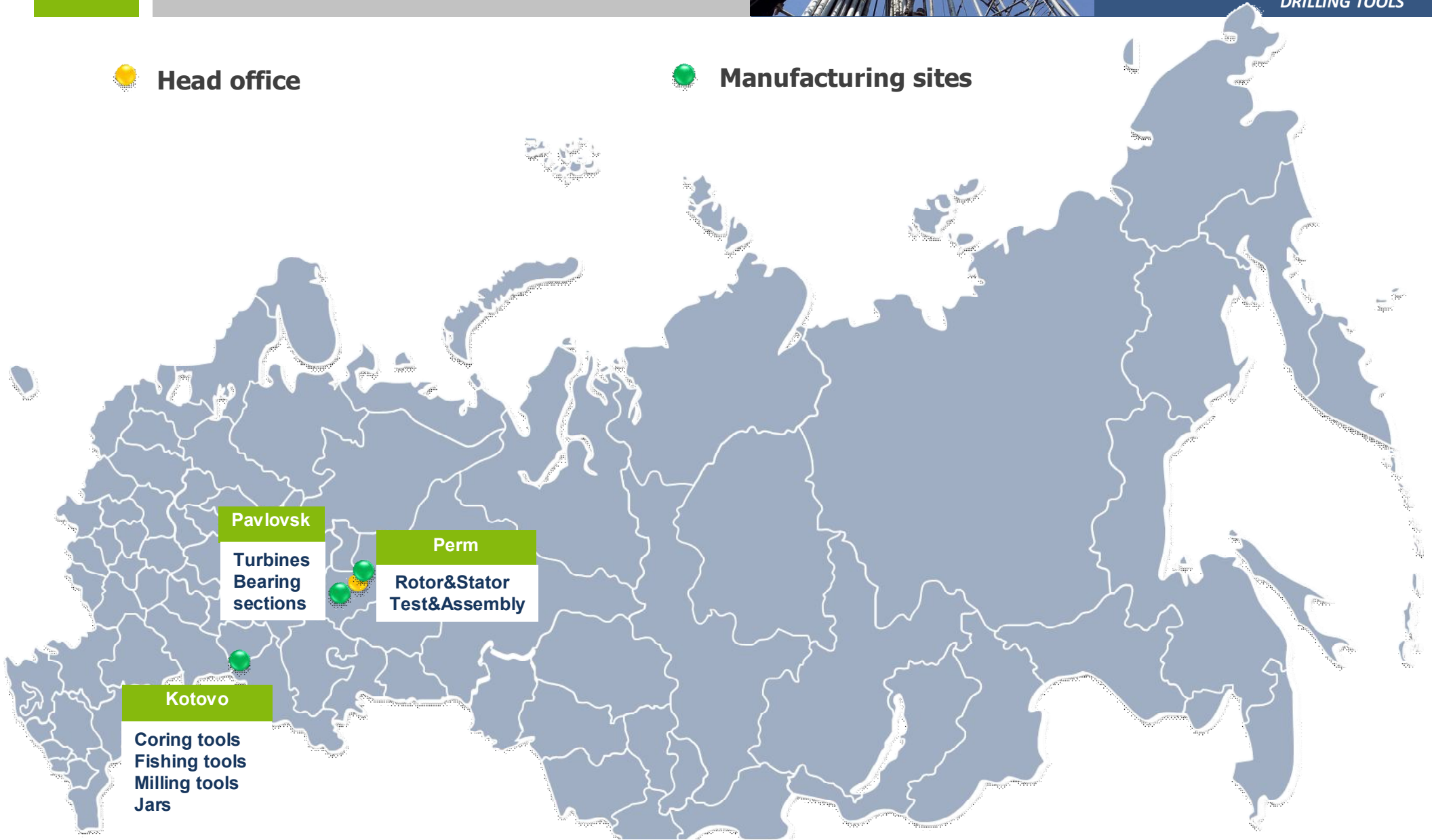


SPA Drilling technologies, Moscow city – development of well construction technologies, well planning, well designing



 **Head office**

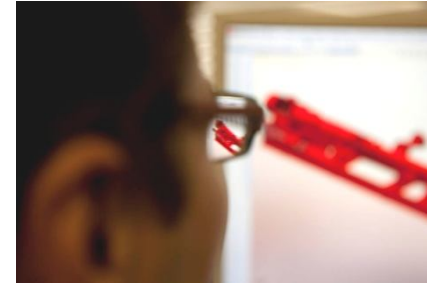
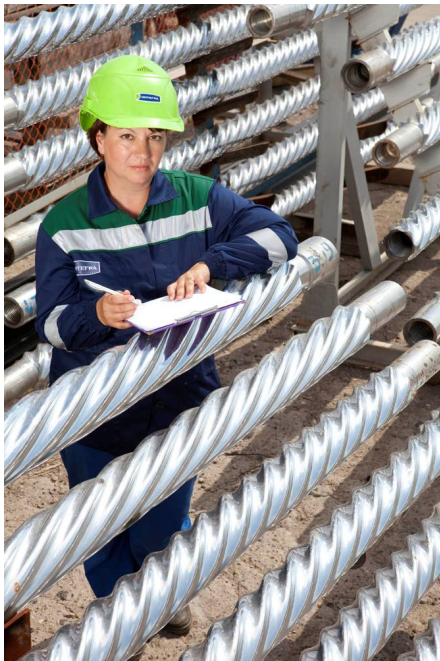
 **Manufacturing sites**



Distance from Perm: to Pavlovsk – 100 km, to Kotovo 2000 km

VNIIBT-Drilling Tools

- PDM **SIBERMOTOR**
- Turbodrills **SIBERTURBINE**
- PC pumps
- Multi-phase pumping units
- Down hole tools rentals and services
- Coring services

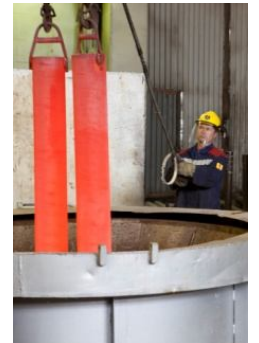


Design & Engineering
Testing complex
Commercial
manufacturing
Servicing and spare parts

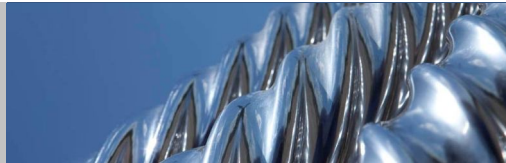


VNIIBT-Drilling Tools, Kotovo branch

- Packers
- Fishing tools
- Coring equipment
- Drill string components
- Casing accessories
- Sidetracking system
- Shock absorbers
- Jars **SIBERJAR**
- Milling tools



In 2013 our Company
produced 536 PDM ,
11 turbodrills, and
1345 Power sections



Quality system of VNIIBT-Drilling Tools Ltd. is certified in accordance with ISO 9001:2000 and API (American Petroleum Institute)

energy **API**
AMERICAN PETROLEUM INSTITUTE

REGISTRATION NO. TS-1958

Certificate of Registration

The American Petroleum Institute certifies that the quality management system of

VNIIBT - DRILLING TOOLS LTD

Production Site: Truda Str. 1, Pavlovsk, Perm Region, Russian Federation
Office: 24 Karpinsky St., Perm, Perm Region, Russian Federation

has been assessed by the American Petroleum Institute and found to be in conformance with the following:

ISO/TS 29001

The scope of this registration and the approved quality management system applies to the following:

Design, Manufacture, Repair and Rent of Downhole Hydraulic Screw Motors (DHM)

API approves the organization's justification for excluding the following from the scope of this registration:

Section 7.5.4, Customer Property

Effective Date:
Expiration Date:
Registered Since:

W. Dan Whittaker
Manager of Operations, APIQR

This certificate is valid for the period specified herein. The registered organization must continually meet all the requirements of ISO/TS 29001, Petroleum, Petrochemical and Natural Gas Management Systems, and the requirements of the Registration Agreement regularly monitored through annual full system audits. This certificate has been issued by APIQR, 12201 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of APIQR and must be returned upon request. To verify the authenticity of this certificate, go to www.compositelists.com

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AP **QMS REGISTERED**

Certificate of Registration

APIQR® REGISTRATION NUMBER 2175

This certifies that the quality management system of

VNIIBT - DRILLING TOOLS LTD.

Production Site: Truda Str. 1, Pavlovsk, Perm Region, Russian Federation
Office: 24 Karpinsky St., Perm, Perm Region, Russian Federation

has been assessed by the American Petroleum Institute Quality Registrar and found it to be in conformance with the following standard:

ISO 9001:2008

The scope of this registration and the approved quality management system applies to the following:

Design, Manufacture, Repair and Rent of Downhole Hydraulic Screw Motors (DHM)

APIQR® approves the organization's justification for excluding the following from the scope of this registration:

Section 7.5.4, Customer Property

Effective Date: February 4, 2014
Expiration Date: February 9, 2015
Registered Since: May 23, 2013

W. Dan W.
Manager of Operations

Accredited by Member of the International Accreditation Forum Multilateral Recognition Arrangement for Quality Management Systems

This certificate is valid for the period specified herein. The registered organization must continually meet all the requirements of the Registration Agreement. Registration is maintained and regularly monitored. Further clarification regarding the scope of this certificate and the applicability of ISO 9001 standard requirements may be obtained by consulting the registered organization. This certificate has been issued from APIQR offices located at 12201 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of APIQR and must be returned upon request. To verify the authenticity of this certificate, go to www.api.org/compositelist.

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energy **API**
AMERICAN PETROLEUM INSTITUTE

REGISTRATION NO. Q1-2077

Certificate of Registration

The American Petroleum Institute certifies that the quality management system of

VNIIBT - DRILLING TOOLS LTD.

Production Site: Truda Str. 1, Pavlovsk, Perm Region, Russian Federation
Office: 24 Karpinsky St., Perm, Perm Region, Russian Federation

has been assessed by the American Petroleum Institute and found to be in conformance with the following:

API Specification Q1

The scope of this registration and the approved quality management system applies to the following:

Design, Manufacture, Repair and Rent of Downhole Hydraulic Screw Motors (DHM)

API approves the organization's justification for excluding the following from the scope of this registration:

Section 7.5.4, Customer Property

Certificate of Authority to use the Official API Monogram

License Number: 7-1-0981 ORIGINAL

The American Petroleum Institute hereby grants to

VNIIBT - DRILLING TOOLS LTD
Truda Str. 1
Pavlovsk, Perm Region
Russian Federation

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and API Spec 7-1 and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **7-1-0981**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

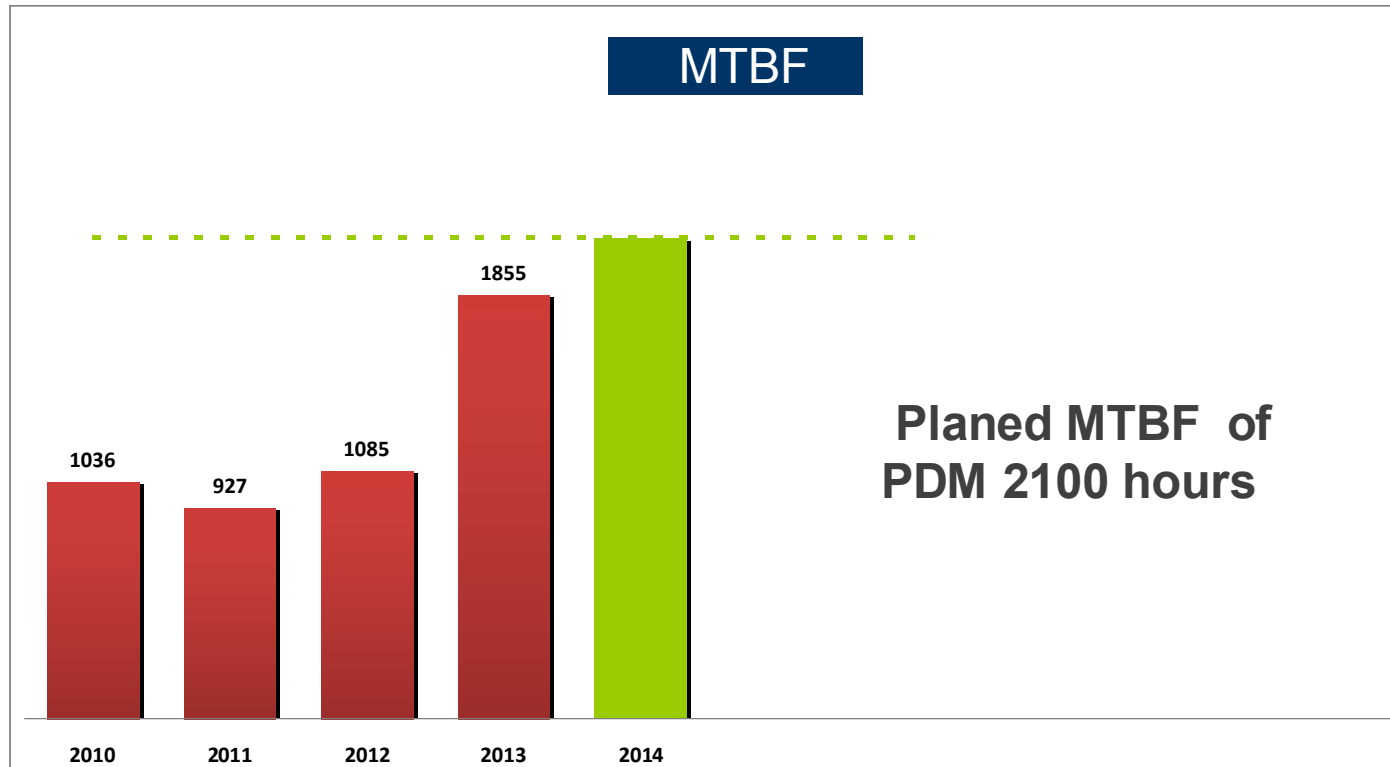
The scope of this license includes the following product: Threading for Rotary Shouldered Connections

QMS Exclusions: Section 7.5.4, Customer Property; Section 7.3, Design and Development

Effective Date: **OCTOBER 16, 2012**
Expiration Date: **OCTOBER 16, 2015**
To verify the authenticity of this license, go to www.api.org/compositelist.

American Petroleum Institute

John Madine
Director of Global Industry Services



Quality Certification

2011 Application has been made to the API to participate in the **API Monogram Program**

2012 Audited and received a license from the **API Monogram Program**

2013 Certification process for Rental and Servicing

2014 Passing the recertification audit scheduled for **9 edition of Specification API Q1** standard
Implementation of "**Lean Six Sigma**" in manufacturing process

Weingartner processing complex for rotors manufacturing

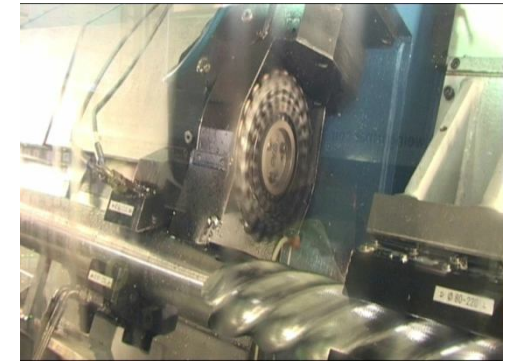


VARIO 700
milling multiaxis machine
tool

VARIO 900
milling multiaxis machine
tool



FINISH 450
polishing multiaxis machine
tool



Implementation of high tech process equipment allowed to:

- Increase precision and quality of rotor production
- Always achieve highest power parameters
- Ensure long life of PDM power sections
- Manufacture rotors of up to 9m length

Stator manufacturing: full modernization

- Horizontal injection-moulding machine **Desma**
- Rubber curing in a heat-transfer liquid media (low-molecular polymer)
- Blasting equipment was replaced
- Rubber-to-metal bonding technology and other auxiliary processes were modernized
- Manufacturing of stators up to 9 meters long



Production facilities modernization was completed in the first half of 2011

The laboratory of rubber articles is equipped with the modern equipment from leading global manufacturers: **Prescott, Brabender, Hegewald&Peschke**



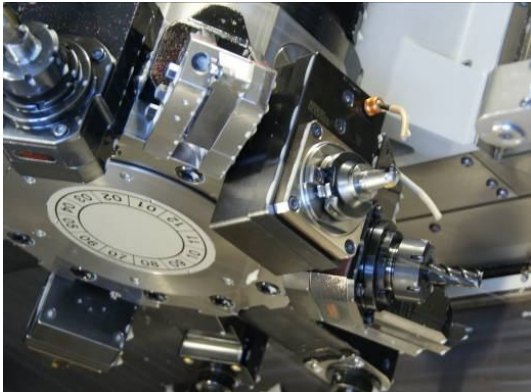
Functions

- Incoming inspection of the rubber compounds used in stators manufacturing
- Selection of compounds for power sections in accordance to specific operating conditions
- Imitation of operating conditions of products
- Research of dynamic properties of rubbers



Target

- Increase of reliability of power sections
- Development of own rubber compounds under various applications
- Implementation in manufacturing of new materials for release of new types of power sections:
 - ✓ - with operation temperature up to **150 °C**
 - ✓ - with the raised energy characteristics (**hard rubber**)



Purchased equipment:

- 6 processing centers **MAZAK** company (Japan)
- 4 processing centers **DOOSAN** company (Korea)
- Blasting equipment
- The other modern high-efficiency equipment



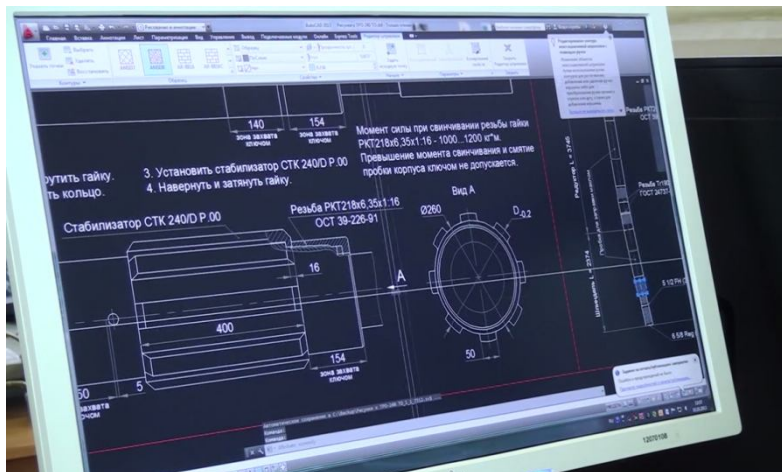
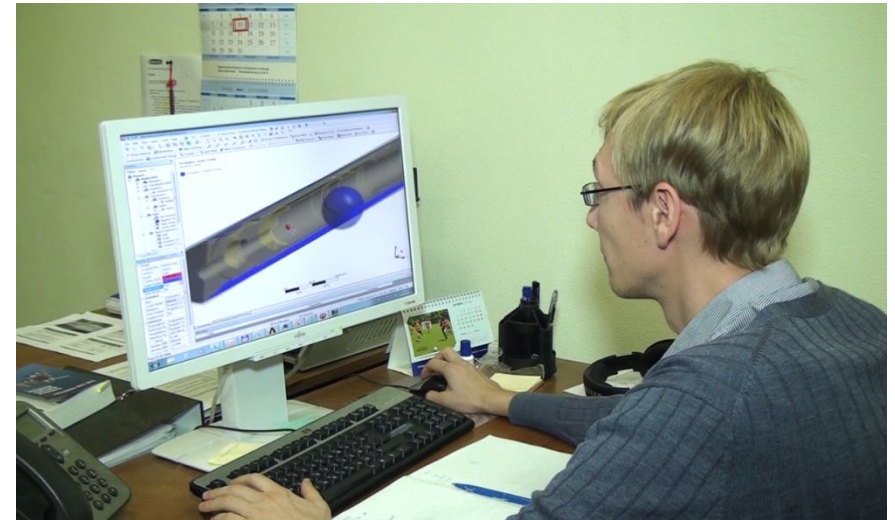
Manufacturing of new equipment is several times of higher quality

New equipment has up to 1 micron precision

Bearing section manufacturing modernization was completed in H1 2011

Always focused on the customer specific needs we are looking for new ways to improve the reliability and power characteristics of our drilling tools

- Company employs more than 20 designers
- There is a research laboratory of rubber products equipped with most modern equipment
- There is a unique test bench for turbodrills
- We have unique stand for threaded connections testing

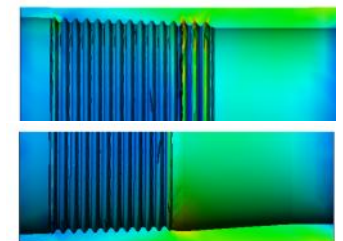
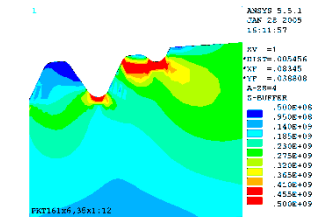
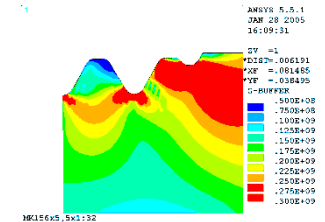


Design Department Structure:

- Mud motors division
- Turbodrills division
- Jars division
- Progressive cavity pumps division

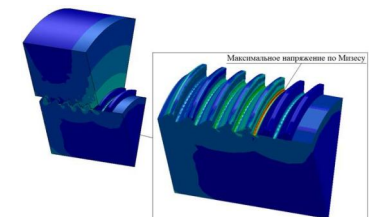
Using new materials with high mechanical properties :

- Usage of high-structural steel with high strength characteristics for hardworking parts of bearing sections
- Cold steel usage of international producers with high mechanical properties for the stators housing manufacture
- Utilization of world class producers of rubber compounds with high physical and mechanical properties
- Tungsten carbide coating **Bodycote** of PDM rotors, used in aggressive environment



New reinforced threads for housings:

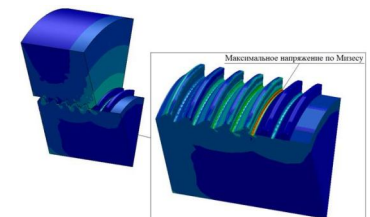
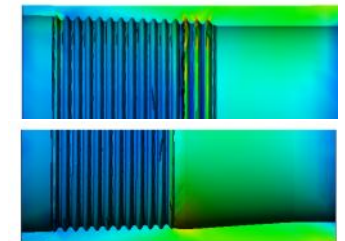
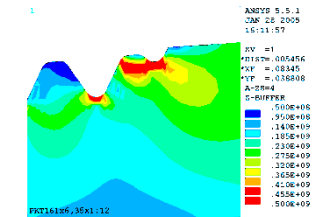
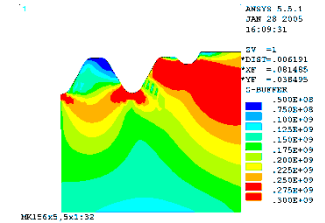
- Maximum stress reduction by design elements
- Fatigue strength increase due to thread surface layer hardening
- Polymer coating for the use in H2S environment
- Tungsten carbide hardening of PDM rotors, used in aggressive environment





Testing complex for threaded joints on the fatigue strength :

- UP-200M stand is designed for full-scale fatigue test of samples with 150 ... 240 mm OD at a bend in the symmetric cycle
- The tests can give an image of how various factors influence on the product strength: stress concentrators, the hardening technology, chemical and heat treatment, etc.
- The stand is a vibrating system, which allows to put to the test sample alternating bending load
- The oscillation frequency (amplitude) is controlled by changing RPM of the electric engine



It is a highly efficient tool corresponding to the requirements of all modern oil and gas on- and off-shore well drilling technologies

BASIC DESIGNATION OF THE MOTOR

SM375.7850

Product code

SM – SIBERMOTOR

Diameter in the decimal representation of the size in inches X100

3 ¾"

Lobes configuration, rotor/ stator

7/8

Stages X 10

5,0

SIBERMOTOR ADVANTAGES :



- PDM standard configuration has adjustable bent housing, except for three small diameter motors
- PDM top sub has regular type connecting box thread and simultaneously acts as a catching device of the rotor
- Additionally installed float and/ or damp subs also have standard connecting regular type threads that excludes usage of supplementary X-over subs
- Power section of any motor can be made of a rubber compound having increased mechanical properties, so called "hard rubber" which is power equivalent to "even wall technology"



It is a highly efficient tool corresponding to the requirements of all modern oil and gas on- and off-shore well drilling technologies



SIBERMOTOR SPECIAL ADVANTAGES :

- Increased WOB capacity with larger diameter bearing section
- Improved durability and reduced maintenance time with a **titanium shaft**
- Reliable work in salt mud containing chloride-ions more than 50000 ppm with **TC Aswan-IEC rotor coating**
- Heat resistance up to **130° C** (standard up to 100° C)
- Increasing power up to 50% with "even wall" **stator**, analogue of Hemidrill NOV brand
- Up to 50% increase of power with "**hard rubber**" **stator**, analogue of NBR-HR DynaDrill brand

SPECIAL MODIFICATION OF THE DESIGN

SM375S.7850H.C

S – (spindle) increased diameter spindle corresponding to the diameter of the next size

D – (direct) straight motor

Ti – (titanium) flex shaft

H – (high speed) super high RPM

T – (temperature) heat resistant version

N – (nitrogen) nitrogen resistant version

U – (ultra power) hard rubber

X – reinforced stator

C – (tungsten carbide) rotor hard coating



SIBERTURBINE HS is a high speed turbodrill for optimal performance while drilling hard and highly abrasive formations with impregnated bits

SIBERTURBINE GR is turbodrill with planetary gear reducer, is the only real alternative to drill high-temperature wells and in cases when high torque PDC bits are used

SIBERTURBINE ADVANTAGES :

- Guaranteed heat resistance of up to 200° C
- Significantly reduced BHA shocks and vibrations
- Enhanced time between maintenance due to the thrust bearing with PDC inserts as well as turbine section radial bearings reinforced by the HVOF coating
- Power characteristics stability within turbodrill run time

BASIC DESIGNATION OF THE TURBODRILL

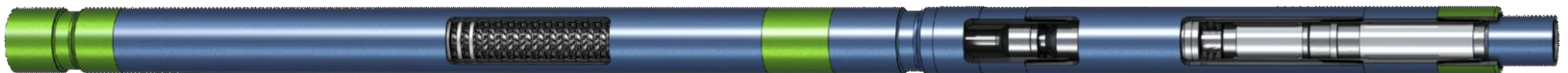
ST475AHS.T1

PRODUCT CODE
ST – SIBERTURBINE

Diameter in the decimal representation
of the size in inches X100 4 ¾"

A (adjustable) adjustable bent housing
HS (high speed) high speed
GR (gear reduction) geared

T1 turbine stage type



Jar is the drilling tool applied for the release of stuck BHA. Jar has been designed as a BHA component. In case of drill string stuck, jar facilitates its release

The optimal means of stuck release is to force down or pull up the drill string. Thus, forced pull or slack off drill string is to be applied. At the moment of the jar actuation, the stuck point is jarred with various degrees of intensiveness in the certain direction. The jar enables to accumulate and instantly release the energy of the pulled up or compressed DS interval located above the stuck zone.

The impulse transmits to the stuck drill string and releases it.

SIBERJAR ADVANTAGES :

- The **HYDRAULIC** jar is not equipped with latch activation mechanism. Therefore, the jar may be operated in extended reach wells, where achieving of axial force required for jar charging is complicated
- The **HYDROMECHANICAL** jar equipped with latch activation mechanism, which eliminates the possibility of unintentional actuation in case of build-up force or while the drilling process. The jar is optimal for operation in vertical or low inclination wells, where it is easy to apply and control axial charge force.

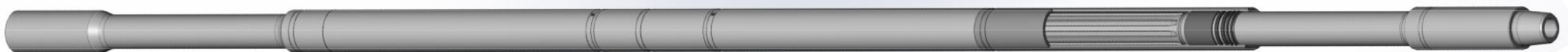
BASIC DESIGNATION OF THE JAR

SJ475HM

PRODUCT CODE
SJ – SIBERJAR

Diameter in the decimal representation
of the size in inches X100 4 ¾"

“None” - hydraulic type
HM - hydro mechanical type



Jar is the drilling tool applied for the release of stuck tools. Jar has been designed as a BHA component. In case of drill string stuck, the jar facilitates its release

Jars produced are up to leading international standards.
Design features use of 2 hydraulic jets

Guaranteed operation lifetime - 5000 hours
MTBM – more 500 hours

BASIC DESIGNATION OF THE JAR

SJ475HM

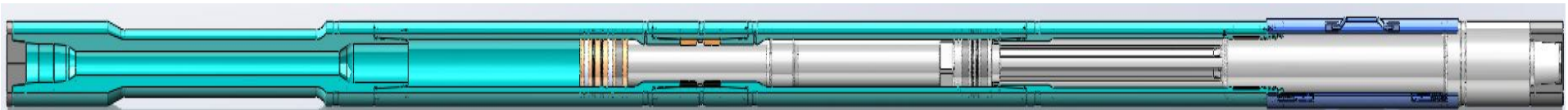
PRODUCT CODE
SJ – SIBERJAR

Diameter in the decimal representation
of the size in inches X100 4 ¾"

“None” - hydraulic type
HM - hydro mechanical type

SIBERJAR Russian Fleet (Q3 2014):

- **HYDRAULIC** jars:
 - 4 ¼" 38 ps.
 - 4 ¾" 46 ps.
 - 6 ¾" 90 ps.
- **HYDROMECHANICAL** jars:
 - 4 ¼" 20 ps.
 - 4 ¾" 24 ps.
 - 6 ¾" 75 ps.
 - 8" 10 ps.





Field tests of SIBERMOTORS 9 1/2"

■ National Iranian Drilling Company (NIDC):

- 1739-1864 m ROP=1,98 m/h
- 17 1/2" HC606

■ VIETSOVPETRO, Dragon field:

- 2376-2750 m ROP=24,1 m/h and 2750-3355 m ROP=7 m/h
- 12 1/4 HC 604 CM

■ VIETSOVPETRO, White Tiger field:

- 718-1558,5 m ROP=16,9 m/h
- 17 1/2" GG1



Achieved results

CHINA,
Uighur area 4386 - 4406 m

CHINA,
Daqing 2900 - 3628 m

KAZAKHSTAN,
Zhanazhol,
Great Wall 2740 - 3192 m



TURBODRILLS

12 1/4" TI3205
King Dream

May 2011
ROP=0,97 m/h

8 1/2" K705
Kinetic

June 2011
ROP=2,48 m/h

8 1/2" K707
Kinetic

June 2012
ROP=3,37 m/h

ROP increased twice and more



4 Service centers

Usinsk workshop is
under construction

3 Representative offices



Overall Russian rental fleet is over 900 tools*

(*end of 2013)

Activity for drilling tools rental business

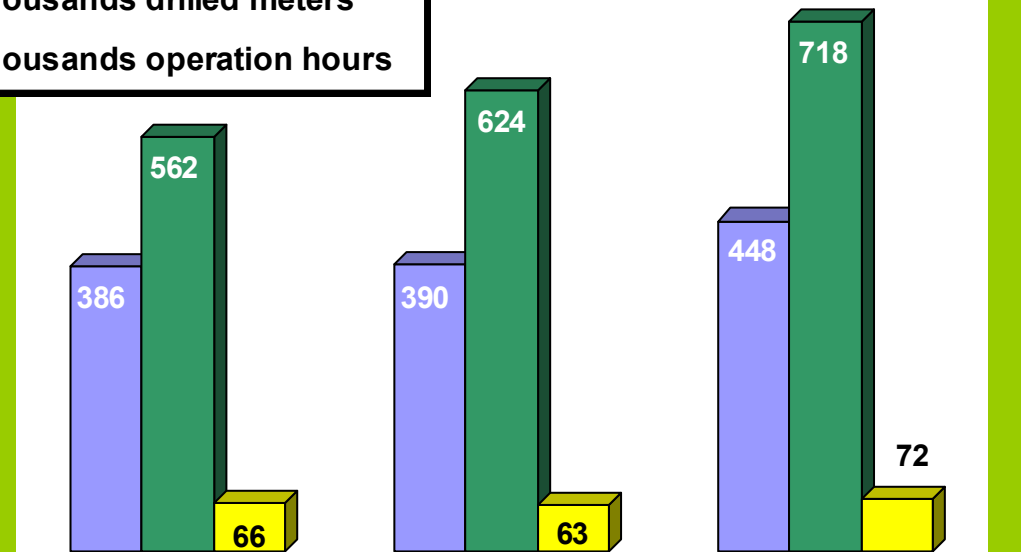


Mein Customer:

- Orenbugneft
- Slavneft
- Eurasia Drilling Company
- Irkutsk Oil Company Service

Drilling Tools Rental with supervision

- Drilled Wells
- Thousands drilled meters
- Thousands operation hours



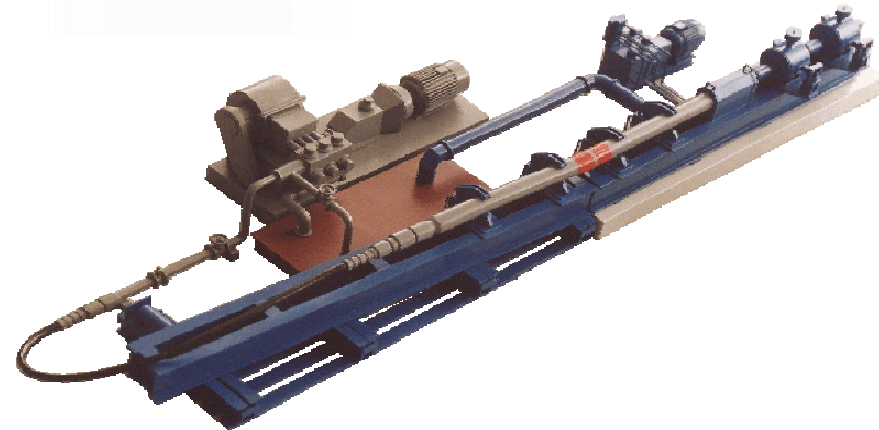
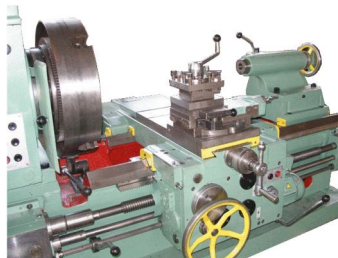
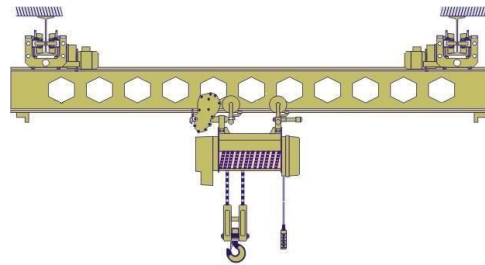
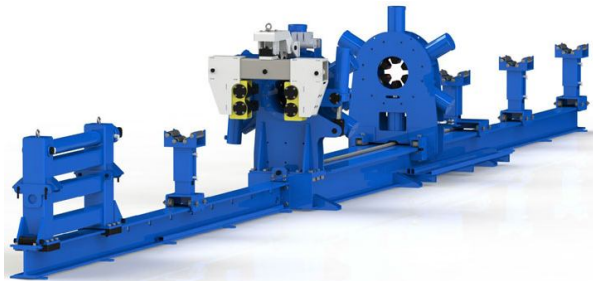
2012

2013

Planned 2014



- Break-out unit
- Push-pull stand
- Beam crane
- Washer
- Inspections equipment
- Lathe and pipe-threading machine
- Test stand for PDM (Dynamometer)





- **VNIIBT-Drilling Tools offers a complete service complex for Customer drilling program taking into consideration drilling intervals, parameters and environment, equipment delivery and servicability**
- **We are ready to supply, and rent modern and powerful positive displacement down-hole motors, turbodrills and geared turbodrills**
- **Up-to-date hydraulic bottom-hole motors produced by INTEGRA-Drilling Tools can be used in different well intervals and with any type bits, both under standard and harsh drilling conditions such as big depth, high temperature, aggressive muds**
- **Fast construction of service centers in any perspective region is possible**
- **We provide uninterrupted delivery of spare parts for high-quality maintenance of our drilling tools**

VNIIBT Drilling Tools Ltd.

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www.vniibt-bi.ru