Anton Completion Technology
Contents

01 Completion Production Line

02 Completion Technology

03 Services Tools and Equipment

04 Global Clients
1. Completion Product Line

- Anton completion focuses on integrated service

- A leading completion service provider locally in China
- Also an excellent partner with other IOSC globally
- Completion services and productions business in 17 countries
- 9 international service bases and 300 members supporting field services
1. Completion Product Line

- Business Scope

- Integrated Services
  - Stimulation
  - Production Completion
  - Cementing Completion
  - Sand Control
  - Water Control
  - Water Injection
## 1. Completion Production Line

### Services Capacity

<table>
<thead>
<tr>
<th>Service Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated completion design</td>
<td>Reservoir evaluation, engineering design, effect evaluation, simulation experimental.</td>
</tr>
<tr>
<td>Full-set down-hole tools</td>
<td>HTHP and Anti-corrosive completion tools, with 4 manufacture base in China.</td>
</tr>
<tr>
<td>Surface equipment</td>
<td>11set Coiled tubing units and 100,000 HHP pumping capacity.</td>
</tr>
<tr>
<td>Professional service group</td>
<td>7 Seiner experts and 60 engineers support global field operation, with 9 services bases globally.</td>
</tr>
</tbody>
</table>
## Contents

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>01</strong></td>
<td>Completion Production Line</td>
</tr>
<tr>
<td><strong>02</strong></td>
<td>Completion Technology</td>
</tr>
<tr>
<td><strong>03</strong></td>
<td>Services Tools and Equipment</td>
</tr>
<tr>
<td><strong>04</strong></td>
<td>Global Clients</td>
</tr>
</tbody>
</table>
2. Completion Technology

◆ Anton provide characteristic completion technology

(1) Integrated completion solution

- Full-range wellbore completion design
- Complete surface and down-hole equipment
- Professional on-site technical services
  - Wellhead
  - Completion fluid
  - Production completion services
  - Stimulation/Cementing/Sand control completion services
2. Completion Technology

(1) Integrated completion solutions

- Multi-lateral completion well
- Reduce well construction cost and operation time
- Key technologies of assess, isolation and re-entry.
(2) Production completion technology

- HT/HP well or CO2/H2S gas well.
- Reliable safety valve systems, flow control systems, and packer systems secure a stable production.

150 °C
Max. 1500 0psi
Nickel base alloy
2. Completion Technology

(2) Production completion technology

✓ Using a permanent packer and PBR re-connection.
✓ Larger ID for higher pumping and production rates.
✓ One trip of completion system.
2. Completion Technology

(3) Liner hanger technology

- CO2 gas well or HTHP wells.
- Liner hanger & top packer system ensure cementing quality.
- High-pressure tie-back system provides reliable wellbore integration.

150 °C
1000 psi
Tie back
2. Completion Technology

(4) Multi-layers gravel pack technology

- Single trip multi-layers system for fracturing or circle gravel packing.
- Unique dual seal system ensures independent operation.
- Unique self-alignment Weight Down design can easily locate the indication coupling.
- The large 3.88” inner production bore.
2. Completion Technology

(5) Multi-layers AICD technology

- Automatic identification of oil and water production in isolation layers
- Control high water-cut
- Adjust the oil production contribution in multiple-layer reservoirs
- Integrate the sand control, water control with stimulation
2. Completion Technology

(6) Intelligent water injection technology

- Real-time monitoring of injection parameters
- Manage injection parameters according to monitoring data lively
- Reduce time and cost of work-over
Contents

01 Completion Production Line
02 Completion Technology
03 Services Tools and Equipment
04 Global Clients
3. Services Tools and Equipment

◆ Liner hanger system
  ▪ Liner Hanger Series
    • Conventional liner hanger
    • Hong AT rotatable liner hanger
    • Retrievable liner hanger
  ▪ Expand Casing Packers
    • ECP/ACP Packer
    • Swell Packer
  ▪ Casing Accessories
    • Cementing Stage Tool
    • Dart/Plug/Landing Collar
    • Float Collar/Shoe
    • Centralizer (rigid/bow)
  ▪ Applications
    Main market: China, Iraq, Ethiopia, Central Asia, South America
3. Services Tools and Equipment

◆ Liner hanger system

■ HongAT rotatable liner hanger system
  • Ideal for gas storage wells, severe corrosion gas wells, 3D wells and other hostile wells.
  • Can rotate liner while RIH or cementing job.
  • Work load up to 200tons.
  • 10000psi working pressure.
  • 180 Deg.C working temperature.
  • High performance raw material selected.
3. Services Tools and Equipment

◆ Liner hanger system

■ Thermal Retrievable Packer

- Hydraulic set and release.
- Retrieving by pulling directly.
- Easily operating in directional and horizontal wells.
- Sealing capacity:
  - Special polymer materials: Temperature 400 °F, Pressure 5,000Psi
  - Metal polymer materials: Temperature 550°F, Pressure 3,000Psi
  - Special material: More than Temperature 662 °F, Pressure 2,000Psi

■ Applications

The successful applications are more than 60 wells in Venezuela and Ecuador.
3. Services Tools and Equipment

- **Production Completion Tools**
  - **Packer system**
    - Permanent/Retrievable
    - Cable production packer
  - **Safe valve system**
    - Sub-surface safety valve
    - Flow sub
    - Hydraulic control pipe
  - **Flowing system**
    - Sliding sleeve
  - **Applications**
    - Main market: China, Iraq, Ethiopia, Central Asia, South America

Integrate global resources for Customer.
3. Services Tools and Equipment

◆ Production Completion Tools

■ AT-PP Premium Retrievable Packer

- For HTHP gas wells.
- Retrievable and hydraulic-set.
- With performance of a permanent packer as a retrievable packer.
- Retrieval by mechanical cut or shear release.
- 10000psi WP.
- 300 Deg.F WT.
- 9Cr, 13Cr, 718 material selected.
3. Services Tools and Equipment

◆ Stimulation Completion Tools

■ Packer
  • Open Hole Packer
  • Bridge Plug Packer
  • Dissolve Bridge Plug

■ Frac-Sleeve
  • Open Hole Frac-sleeve
  • Cement Frac-sleeve
  • Full bore Frac-sleeve

■ Other Fracturing Tools
  • Polymer ball/Dissolve ball
  • Isolation valve

◆ Applications

The first China local company apply segment hydraulic fracturing technology. Over 800 wells have been applied in open-hole and casing bore.
3. Services Tools and Equipment

◆ Stimulation Completion Tools

■ AT-DFP Dissoluble Bridge Plug

High-performance plug is rated to 10,000 psi for zonal isolation during wellbore stimulation with the most advanced dissolvable metal and rubber materials.

- Materials dissolve time based on temperature and salinity.
- Provides an entire wellbore ID for future operations upon complete dissolution.
- Helps eliminate the risk and costs of conventional plug removal.
- Special slim design for deformed casing in shale development
3. Services Tools and Equipment

◆ Stimulation Completion Tools
  ■ Chemical Agent
    • Fracture liquid system
    • Acid liquid system
    • Nano stimulation liquid system
  ■ Block off material
    • Temporary plug material
    • Chemical plug material
  ■ Proppant
    • Low/Middle/High density ceramsite
    • High strength ceramsite
3. Services Tools and Equipment

◆ Flow Control Product

■ AICD (Autonomous Inflow Control Device)
  • Automatic identification of oil and water
  • Achieve a balanced production
  • Prevent early water breakthrough
  • Limit water area production

■ Applications

  Totally we have applied 36 wells in CNPC, Sinopec, and offshore CNOOC.
3. Services Tools and Equipment

◆ **Flow Control Product**

■ **FCD (Flow Control Device)**

We can provide a comprehensive solution to steam injection and production.

- Uniform steam inject in segmented horizontal wells
- Single directional inject channel
- Automatic inflow control during production
- Single string with steam injection and oil production in CSS or SGAD.

![Steam Injection Valve](image)
3. Services Tools and Equipment

◆ Gravel Pack

■ Service Scope
  • Conventional gravel pack system
  • Single Trip Multi-layers gravel pack system

■ STML GP system
  • Gravel Packer
  • Pack off Housing
  • Closing Sleeve Assembly
  • Sand screen
  • Sump Packer

■ Applications

Over 2,000 wells have been installed in global, widely used in China, Iraq and Colombia.
3. Services Tools and Equipment

◆ Sand Screens

■ Sand Screen Product:

- Precise Punched Slots Screen (PPS)
- Precise Micropore Composite Screen (PMC)
- Water and sand control screen (AICD)
- Pre-Packed Screen (PPK)

■ Applications

More than 1,280,000 meters of global installed, main markets: Most oilfield in China, Canada, South America, Central Asia, Middle East and Africa regions.
3. Services Tools and Equipment

◆ **Sand Screens**

■ **PPS screens**

**Special Lateral Slots**

- *Punched slots patented technology, three-dimensional structure design.*
- Embedded bridge slots, the rapid formation of sand bridge.
- Lateral slots flow structure, avoid formation fluid directly erosion.
3. Services Tools and Equipment

◆ Pump services equipment

Services Capacity:

- 100,000 HHP.
- 47 Pump trucks.
- 3 Liquid nitrogen pump trucks.
- 9 Blander trucks.
- 8 Instrument trucks.
- 5 Pipe line integration trucks.
- More than 100 other trucks.
- 3660 m³ liquid tanks.

Single well Max. 40,000 m³ liquid and 1,600 m³ proppant pumping record.

Max. pump rate 22m³ /min, Max. pump pressure up to 98Mpa.
3. Services Tools and Equipment

◆ Coiled tubing equipment

Services Capacity:

- 11 Coiled tubing service teams.
- Size from 1 ¼” – 2 3/8”.
- Max. operation depth record 5712m.
- Provides a coiled tubing drive packer fracturing.
3. Services Tools and Equipment

- **Manufacturing Base**
  - Tianjin base: Screen and Completion tools
  - Qingdao base: Gravel packing tools
  - Dongying base: Gravel packing and chemical material
  - Suining base: Proppant
3. Services Tools and Equipment

◆ Qualification certificate
  - API SPEC 5CT
  - API Q1
  - API 11D1
  - API 14A
  - ISO 9001:2008 IDT
  - ISO 14001:2004 IDT
  - OHSAS 18001:2007 IDT
Contents

01 Completion Production Line
02 Completion Technology
03 Services Tools and Equipment
04 Global Clients
4. Clients

ANTON 安東

HALLIBURTON
ADNOC
PETRONAS
IRAQ
BOC
ZhenHuaOil
OXY
Weatherford
Lukoil Oil Company
Variperm
PDVSA
Emerald Energy
Bankers Petroleum Ltd.
Mansarover Energy Colombia Ltd.
Andes Petroleum Ecuador Ltd.
GCL
OISS
Superior Energy Services
Suncor
COSL
NGEC

东方智慧 全球分享
Oriental wisdom Global sharing
THANKS!
Helping others succeed…