

**ANTON 安東**



**Anton Coiled Tubing Service**

**东方智慧 全球分享**  
Oriental wisdom , Global sharing

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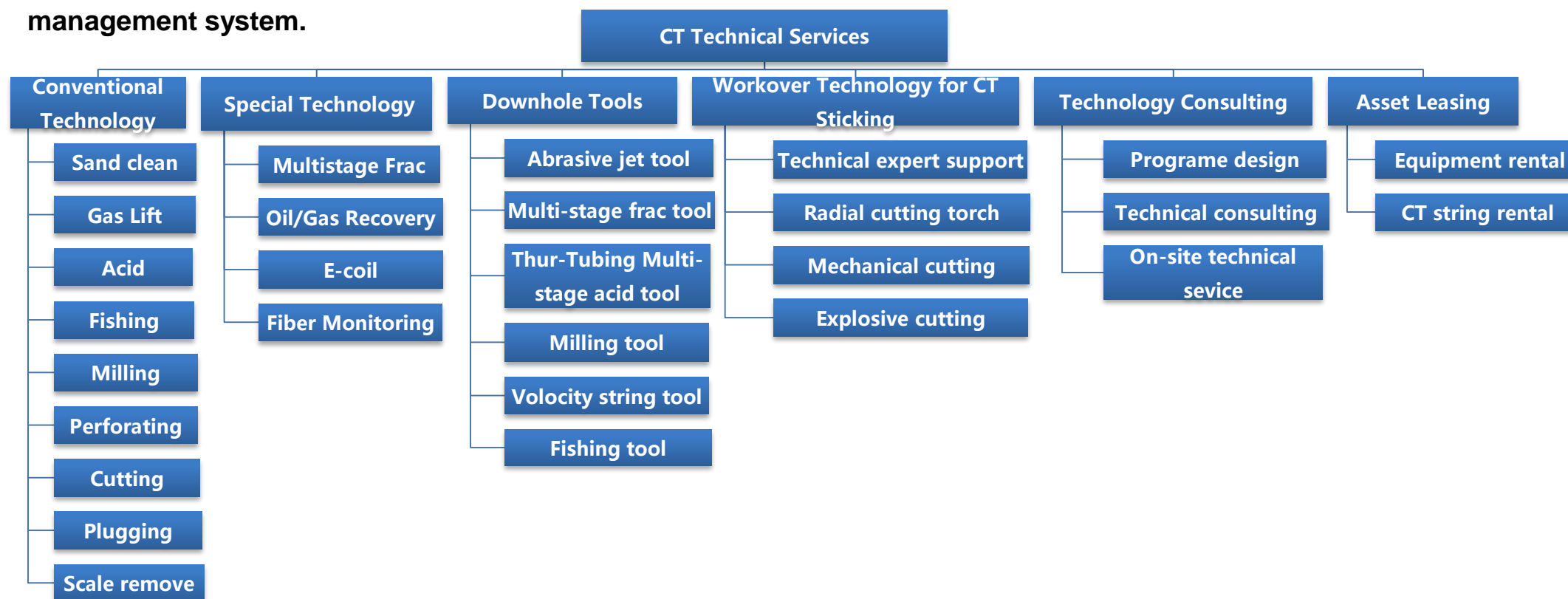
Overview

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Technology Introduction

# 一、Overview

- Anton CT Business Unit establish in 2009, the headquarter is located in Sichuan province. Anton CT Business Unit is an earliest private CT service company in China which hold totally 11 sets of CTU. 6 sets in domestic of China the other 5 in Iraq. More than 100 CT auxiliary equipment, providing all-round CTU management services, tools technical services, oil and gas production services, operation services and supporting services, Anton have high-quality CT operation team with advanced management system.



## 二、Technology Introduction

### ■ 1、Coiled Tubing for Abrasive Perforation and Drag-Fracturing/Acidizing Technology

The technology is based on Coiled Tubing dragging working string to isolate the bottom zone in one single trip. Then use abrasive perforating to create contact with formation and continuous fracturing stage by stage. Anton provides advanced Coiled Tubing operation, special designed abrasive perforation tools and bottom packer string, achieving a perfect combination of Coiled Tubing and operation string.

#### ➤ Technical features

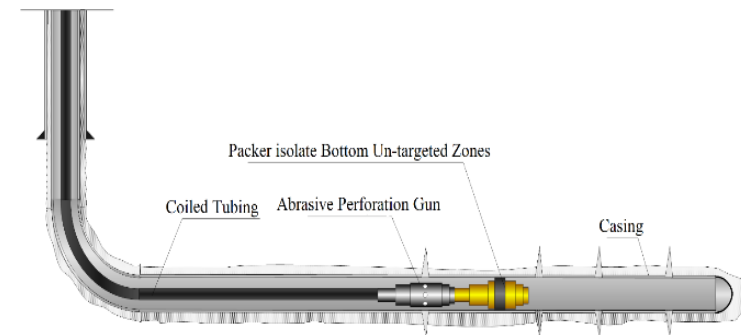
- High efficient and continuous fracturing through CT dragging working string.
- Precise locating the target zone and continuous isolating fracturing stages.
- Flexible zone setting and no pre-setting downhole tools needed.
- Unlimited frac stages with full-bore access.

#### ➤ Scope of application

- Suitable for vertical well, large slope well, horizontal well casing completion, multi-layer (section) fracturing, thin interbed fracturing.
- Can be used for cementing and preset hole packer and other full-path completion methods, covering size :4-1/2", 5", 5-1/2".
- To meet the needs of sandstone, conglomerate, carbonate, shale gas and coal-bed gas reservoir reconstruction.

#### ➤ Performance

- Integrated services providing tools, technology, equipment and personnel worldwide including China and Iraq.
- As the leader of this technology ,200 wells and more than 3500 layers have been completed in China's Ordos Basin, Xinjiang Junggar Basin, Sichuan Basin and Iraq's Hafaya oil and gas blocks.



## 二、Technology Introduction

### ■ 2、Coiled Tubing for Closable Sliding Sleeve and Drag-Fracturing Technology

The Coiled Tubing takes bottom packer string to isolate the un-targeted zone and open the pre-set sliding sleeve for fracturing. This technology can fracture multiple zones in one single trip.

Anton provides advanced Coiled Tubing operation, specially designed for sliding sleeve and bottom packer working string as a perfect combination of continuous working and completion tools.

#### ➤ Technical features

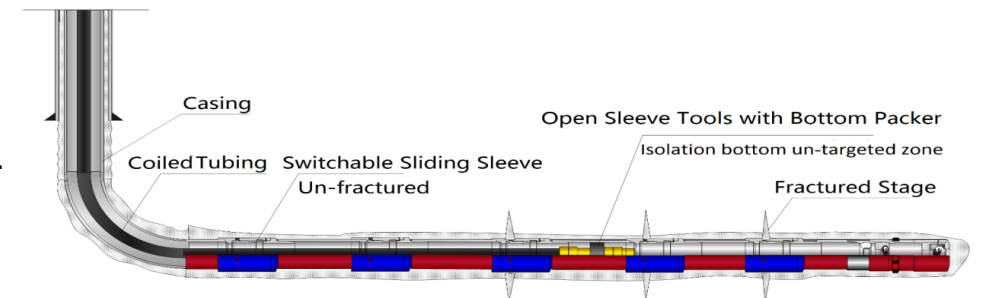
- Efficient and continuous fracturing with CT dragging working string to target zones.
- Sliding Sleeve can be repeatedly opened and closed as production demand.
- Unlimited fracturing stages, and full-bore access.

#### ➤ Scope of application

- Adapted to vertical well, large slope well and horizontal well casing completion, especially suitable for super long horizontal section multi-stage transformation (>50).
- Can be used for cementing and preset hole packer and other full-path completion methods, covering size :4-1/2", 5", 5-1/2".
- To meet the needs of sandstone, conglomerate, carbonate, shale gas and coal-bed gas reservoir reconstruction.

#### ➤ Performance

- At present, 7 wells have been used in Sichuan Basin and Ordos Basin, and the application of the first CT switchable cementing slip casing well in China was first completed in 2017.



## 二、Technology Introduction

### ■ 3、Velocity-string Technology

CT production and gas production technology (velocity string technology) refers to the installation of a small diameter of CT in the wellbore as a drainage pipe string to improve the gas well carrying capacity. The basic principle is that the fluid velocity on the smaller cross-section is increased by the principle of fluid dynamics of the variable diameter pipe without moving the original downhole production string. Anton has a mature oil production and gas production special CT and other independent supporting tools, providing CT production and gas production technical services and customized oil production and gas production CT and supporting products.

#### ➤ Technical features

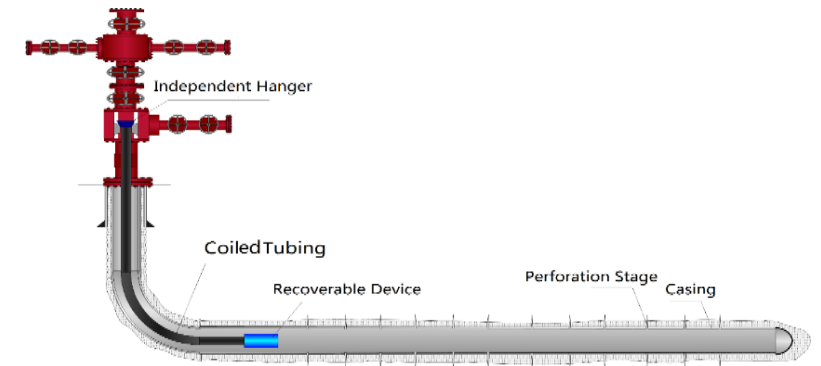
- According to well condition, various forms of suspension can be realized, and the operation is safe and reliable.
- Optimized string size without additional downhole throttling or surface heating.
- Adjustable working system, long repair-free period, no need for special equipment and power device except for preferred string.

#### ➤ Scope of application

- Suitable for gas wells with certain self-spraying capability but without flooding.
- Multiple suspension solutions available. Optimal string selection and drainage design
- 1.25", 1.5", 1.75", 2", 2.375", 2.875" full series of CT, downhole supporting tools, wellhead supporting equipment.

#### ➤ Performance

- The technology has been successfully implemented in more than 200 wells in many regions at home and abroad



## 二、Technology Introduction

### ■ 4、Coiled Tubing Conveying Technology with Cable /Fiber

CT conveying technology is to use the transmission capacity of CT to transfer logging, testing, downhole camera, bridge plug linkage, perforation, cutting and other specific tools to oil and gas wells for operation. Anton can provide technical services and supporting tools for the down-entry of CT with various borehole conditions.

#### ➤ Technical features

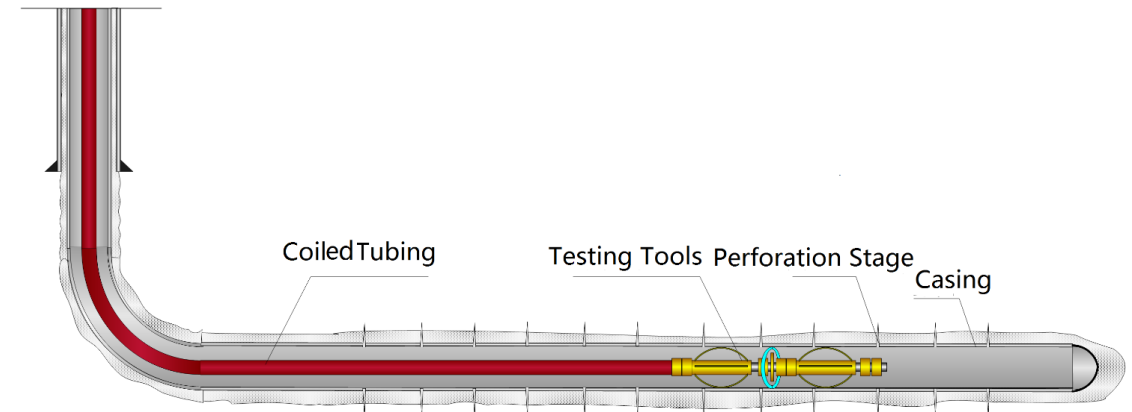
- Where a particular tool can be delivered to a CT.
- Can realize the service of CT through cable, also apply to the service without cable.
- Strong ability to handle abnormal conditions, can pump liquid, pull tonnage.
- Safe and reliable operation, high time limit.

#### ➤ Scope of application

- Suitable for horizontal well, directional well, straight well, bare hole well, sieve pipe well.

#### ➤ Performance

- More than 100 wells have been constructed, including 50 wells of CT cable logging ,34 wells of storage logging ,5 wells of fracturing of bridge plug under CT cable and 8 wells of cutting operation.



## 二、Technology Introduction

### ■ 5、CT Through Tubing Retrievable Packer Stage Acidizing Technology

The stage acidizing technology of CT through tubing packer is a special stage acidizing technology. Through CT operation, it can seal the casing/tail tube after passing through the tubing, separate the upper and lower layers, realize the stage acidizing operation of the tubing, solve the problem of modification under the condition of wellbore limitation, and greatly improve the single well output.

#### ➤ Technical features

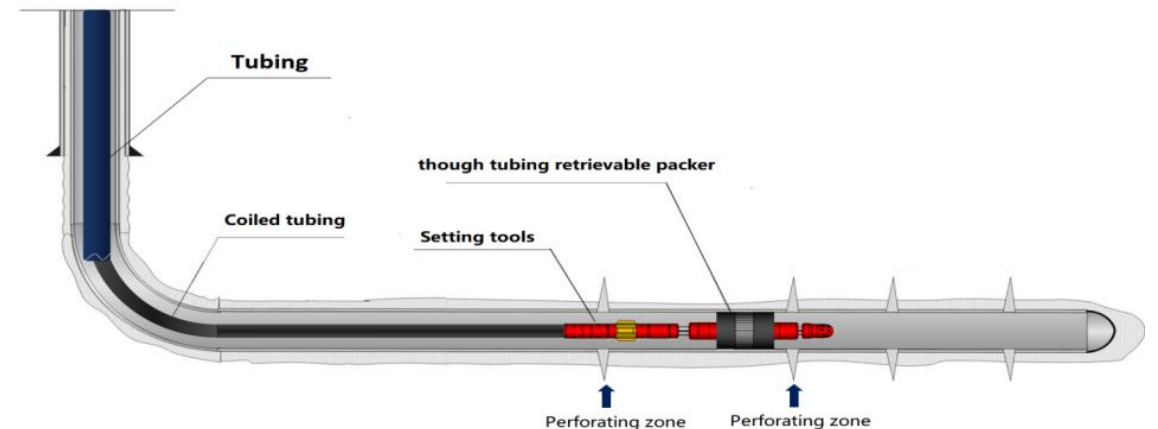
- It is not necessary to start the production string, which can realize the operation of plugging over the tubing.
- Through a CT string operation, high efficiency.
- Packers can be recycled without affecting later production.
- Cross-format dual packers available as required.

#### ➤ Scope of application

- Suitable for various wellbore sizes.
- Limiting wellbore conditions.
- Segmental acidizing.

#### ➤ Performance

- At present, five wells have been used in Iraq to solve the problem of stage acidizing of though tubing which is difficult to realize by traditional technology.



## 二、Technology Introduction

### ■ 6、Coiled Tubing Distributed Fiber Optic Monitoring Technology

This technology is an integrated integrated solution that combines distributed fiber technology with CT. it is a technology to realize distributed monitoring by using optical fiber as both sensing element and transmission signal medium. optical time domain reflection technology is used to detect the changes of temperature, sound wave, vibration, stress and strain along different positions of optical fiber. DTS and DAS are often used in combination for a more complete understanding. With its rich experience of CT operation and strong ability of resource integration, Anton has a full range of solutions from construction to interpretation, which can provide customers with more intuitive wellbore cognition and later modification suggestions.

#### ➤ Technical features

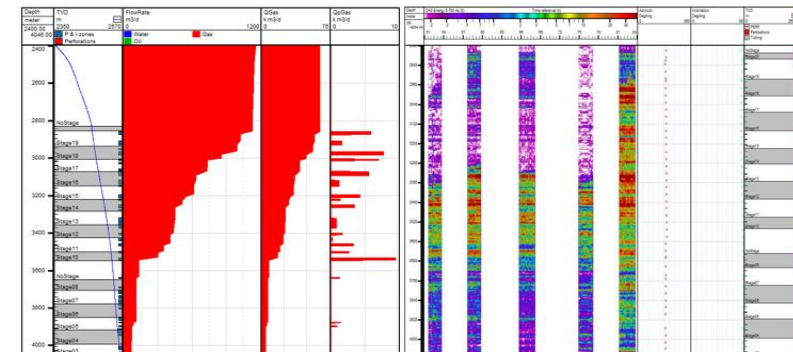
- All-weather monitoring of wellbore integrity to avoid risk
- Do not carry tools, not affected by wellbore cleanliness, can work through tubing, adapt to all kinds of wellbore structure
- All-weather monitoring of production profiles rather than average over time
- Effective monitoring of casing flow

#### ➤ Scope of application

- Oil and gas well production test, leak detection, production production site guidance and evaluation, monitoring between wells

#### ➤ Performance

- At present, the technology has been successfully applied in Sichuan and Chongqing shale gas, dense gas, Ordos basin, Xinjiang oil field and other blocks more than 15 wells.



## 二、Technology Introduction

### ■ 7、Coiled Tubing Conventional Operation Technology

Providing comprehensive CT conventional operation services, including

- Sand washing ( under balanced、 normal )
- Gas lifting with liquefied nitrogen
- Fishing ( wire, cable, pipe, ball, debris, down-hole chock )
- Milling ( composite bridge plug, ball set, block removal )
- Perforation ( TCP, abrasive perforation )
- Cutting
- Cementing & scale remove
- Coiled tubing logging

#### ➤ Technical advantage

- With a complete set of CT equipment and supporting tools to meet various construction requirements.
- Establish comprehensive operating procedures and quality control system
- Experienced and experienced work engineer.

#### ➤ Scope of application

- All kinds of oil casing operation, naked eye operation.

#### ➤ Performance

- Coverage of major oilfields in the country and Iraq, provision of standardized operations and full-process management
- Total construction operations reached more than 3500 wells
- All-process standardized operation, construction period 1-4 days



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