

NEXT GENERATION OF WATER JET CUTTING

**Welcome to ANT Applied
New Technologies AG**

WWW.ANT-AG.COM



A high-angle, close-up photograph of an offshore oil or gas rig. Several large, vertical, cylindrical structures, likely part of the platform's legs or support columns, are visible. These columns are painted in alternating bands of yellow and grey. The rig is situated over a body of water with white-capped waves. The perspective is looking down from the rig's deck, creating a sense of height and scale. A semi-transparent blue rectangular overlay is positioned in the upper left quadrant, containing the text "SHAPING THE FUTURE TOGETHER" in white, bold, sans-serif capital letters.

**SHAPING THE
FUTURE
TOGETHER**

YOUR DAILY CHALLENGE

For operating in offshore structures special requirements must be considered.

CHALLENGING
PLUG & ABANDONMENT

EFFICIENT
DECOMMISSIONING

SUSTAINABLE
REPAIR



OUR SOLUTION

We combine the demand of economic efficiency and environmental sustainability.

ANT technique is particularly suitable for:



Plug &
Abandonment,
Decommissioning
and Repair of
offshore structures



Cutting in areas
with a risk of
explosion



Remote operations
using special mani-
pulators and ROV's
without the
use of divers

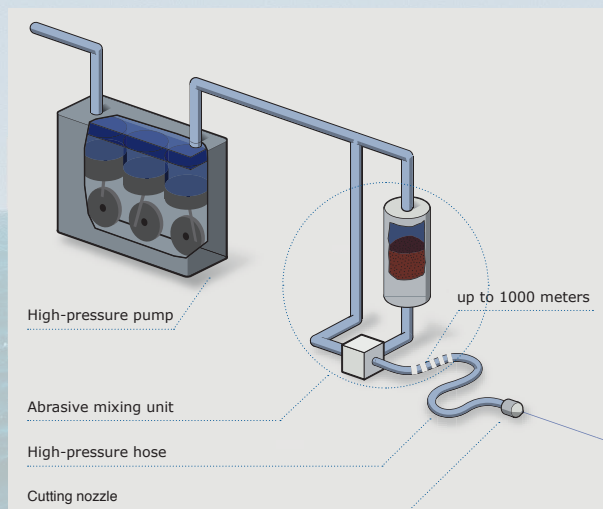


The sustainable
friendly repair
of oil and
gas platforms

WAS Cutting – a unique technology

With the Water Abrasive Suspension (WAS) cutting process almost all materials can be cut with the aid of a cold high pressure water jet and sharp-edged abrasive. This specialized technology is used both in air and under water.

The cuts are executed in a contact-free manner, with no heat generation or deformation, regardless of the material in question. Because of the low recoil it is the ideal cutting tool for remote operations. The important part of the equipment includes a high pressure pump, a mixing unit for the abrasive material, high pressure hoses, a cutting head with nozzle (0.5 to 1.3 mm diameter) and a manipulation system for the nozzle head. The potential energy represented by the pressure and the flow is converted into a cutting jet with a velocity of several hundred meters per second. With the water the abrasive particles are accelerated and these cut like a knife through the work piece.



ANT systems basically consist of a high-pressure pump (HPP), an Abrasive Mixing Unit (AMU), high-pressure hoses and a cutting nozzle.



WAS – THE ADVANTAGES

Water Abrasive Suspension (WAS) unit for cutting
Multi-String Casings and single piles

▶ **CUTTING QUALITY**

- Cold cutting process
- no heat-affected zones
- Good cut-quality – post processing not required
- Minimum kerf width

▶ **EFFICIENT**

- Low abrasive consumption
- High cutting speed
- High energy density
- No generation aerosol

▶ **FAST SETUP**

- Single hose deployment to the cutting nozzle
- Simple and lightweight manipulation due to low reset forces

▶ **SAFE**

- Suitable for ATEX-zones; BAM-certificate
- Suitable for cutting explosives; BAM-certificate



▶ **FLEXIBLE**

- Cutting of all materials
- Steel up to 1000mm
 - ↳ Cutting in air (hose length of 1000m and more)
 - ↳ Cutting under water (max. depth realized: 600m for single casings)

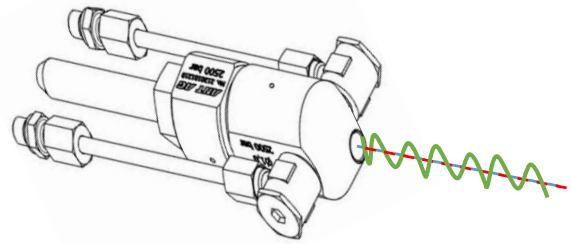


BECAUSE WE CAIR

Repair and dismantling of offshore structures.

Remote operated vehicles (ROVs) and remote controlled cutting-guide systems from ANT permit safe repair and dismantling of oil and gas platforms without the need for deep-sea divers. Even in areas which are at risk from explosion, entire plants or individual parts such as casings, pipelines and steel constructions can be repaired or dismantled in an environmentally friendly manner with the help of ANT solutions. Even interior cuts in narrow pipes (as from 40 millimetres) and cutting work at underwater depths of up to 600 metres are possible (single layers). Extremely high-performance equipment is needed for offshore use.

Our 2500 bar WAS system – the largest and most powerful in the world – is therefore particularly in demand for offshore work.



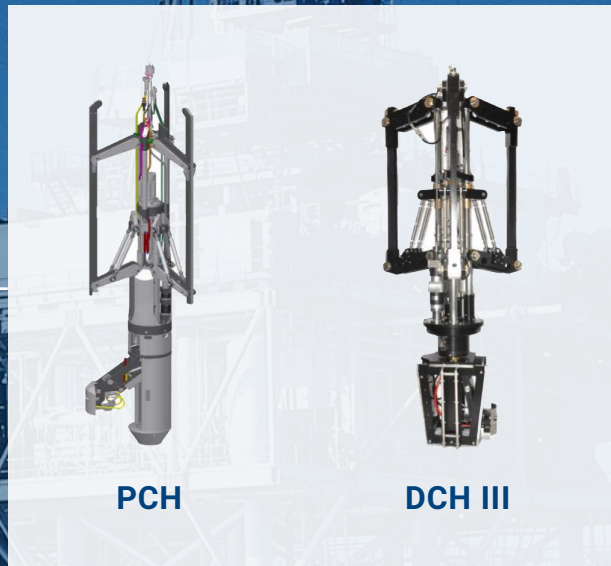
- + *Most powerful & precise jet at 36.000 psi*
- + *Optional dewatering modul*
- + *Airsurrounded jet*
- + *Cuts and quality: with or without cement*
- + *Verified and proven water depth 150m*
- + *With dewatering modul
↳ 250m*

OUR TECHNIQUE

Challenging
Plug & Abandonment



Efficient
Decommissioning



Sustainable
Repair



Packer-Module CAir

Stepless

DCH I

7"

DCH II

9 5/8" → 20"

PCH

16" → 36"

DCH III

30" → 72"

DCH IV

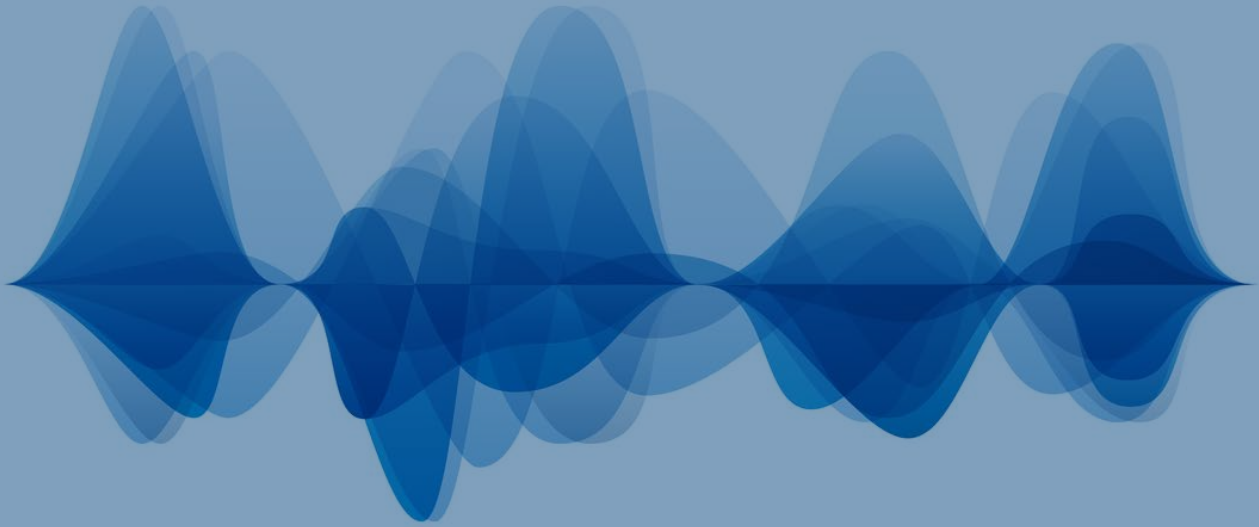
70" → 95"

OVERVIEW



ITEM	Dimensions (L x W x H)	Weight
1. Downhole Cutting Head (DCH) I and II mounted on Skid	6,8 x 2 x 5,3'	0,32 tons (each)
Downhole Cutting Head (DCH) III and IV and PCH mounted on Skid	6,8 x 2 x 5,3'	1,03 tons (each)
2. A Frame / Gooseneck	6,8 x 2 x 5,3'	1,2 tons
3. Winch, Umbilical	6,8 x 2 x 5,3'	9 tons
4. Air Compressor [20']	6,8 x 2 x 5,3'	9,5 tons
5. Abrasive Mixing Unit [20'] (2x AMU2500-100 with Switchbox)	6,8 x 2 x 5,3'	10,7 tons
6. Control System + Hydraulic Power Pack [10']	6,8 x 2 x 5,3'	7,3 tons
7. High Pressure Pump [10']	6,8 x 2 x 5,3'	7,3 tons
8. Working Container + 9. Abrasive 4 tons [20'] → for appr. 22 cutting hours	6,8 x 2 x 5,3'	3,1 tons + 4 tons
TOTAL (excl. 8 + 9)	810,92 ft²	46,4 tons

A CUT AHEAD



3S CUT VERIFICATION SYSTEM

Cutting performance verified by 3S system from ANT

1 CUTTING QUALITY

Signals the cutting grade via traffic light

- Red = no cut
- Yellow = incomplete cut
- Green = good cut

2 CUTTING PARAMETERS

- Absolute angle of the cutting position
- Planned & actual rotational speed
- Water depth
- Working pressure

3 LOG WINDOW

- Reports the sensor readings
- After starting a task, measurements are logged to a file

4 ROTATIONAL GANGING

Shows the speed evenness of the actual cutting feed motion



5 SENSOR AMPLITUDES

Displays the particular signal amplitudes of the sensors

6 CUTTING RESULT

Real time performance feedback at the actual cutting position

CUTTING EXAMPLES



- ▶ Offshore job in the GoM
- ▶ Water depth 60' / 20m
- ▶ Eccentric Casing setup
- ▶ cemented
- ▶ Average cutting speed 30°/h
- ▶ Cutting time 12h

CASING	SIZE IN "
1	7 ⁵ / ₈
2	10 ³ / ₄
3	16
4	36

- ▶ Offshore job in the Chinese Sea/Bohai Bay
- ▶ Water depth 60' / 20m
- ▶ Eccentric Casing setup
- ▶ cemented
- ▶ Average cutting speed 80°/h
- ▶ Cutting time 4,5h

CASING	SIZE IN "
1	13 ³ / ₈
2	20
3	30



- ▶ Mock-up test
- ▶ Water depth 15' / 4m
- ▶ CentricCasing setup
- ▶ cemented
- ▶ Average cutting speed 100°/h
- ▶ Cutting time 3,5h

CASING	SIZE IN "
1	13 ³ / ₈
2	20
3	26
4	30

REFERENCES



„As a service provider we are able to realise a wide range of projects by using ANT technology. The cooperation with ANT is always characterised by quality, know-how and trust.“

AQUATEC

Hoch- & Niederdrucktechnik

Christoph Steffen

Projectmanager



ANT APPLIED NEW TECHNOLOGIES AG

We produce systems for the WAS (Water Abrasive Suspension) cutting process. ANT AG was set up in July 1999 and since then has successfully specialised in the fields of WAS cutting technology and special-purpose machinery. We produce systems for the WAS (Water Abrasive Suspension) cutting process. Various venture capital investors have taken shares in the company and see an expanding future market for this technology.

At present 26 staff are employed at ANT. The training and experience as well as the personal commitment of each individual guarantees the high quality and functionality of our systems and their successful application at the customer's site. We ensure our technological know-how by having a great proportion of our staff as engineers.



Marco Linde, COO



Franz Eder, CEO



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