

NEXT GENERATION OF WATERJET CUTTING

Welcome to ANT Applied New Technologies AG

WWW.ANT-AG.COM

SHAPING THE FUTURE TOGETHER



YOUR DAILY CHALLENGE

For operating in offshore structures special requirements must be considered.



OUR SOLUTION

We combine the demand of economic efficiency and environmental sustainability.

ANT technique is particulary suitable for:

Cutting of multi-string casings and piles as well as repowering.

Cutting in areas with a risk of explosion

Remote operations using special manipulators and ROV's without the use of divers

The sustainable friendly repair of oil and gas platforms

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

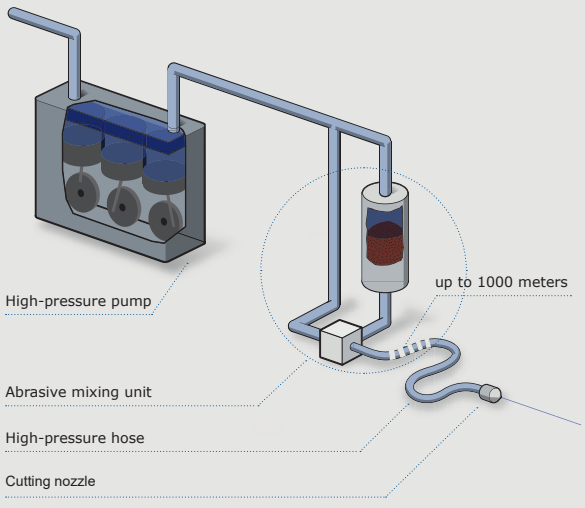
▶ *FLEXIBLE*

- Cutting of all materials
- Steel up to 1000mm
  - ↳ Cutting in air (hose length of 1000m and more)
  - ↳ Cutting under water

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.



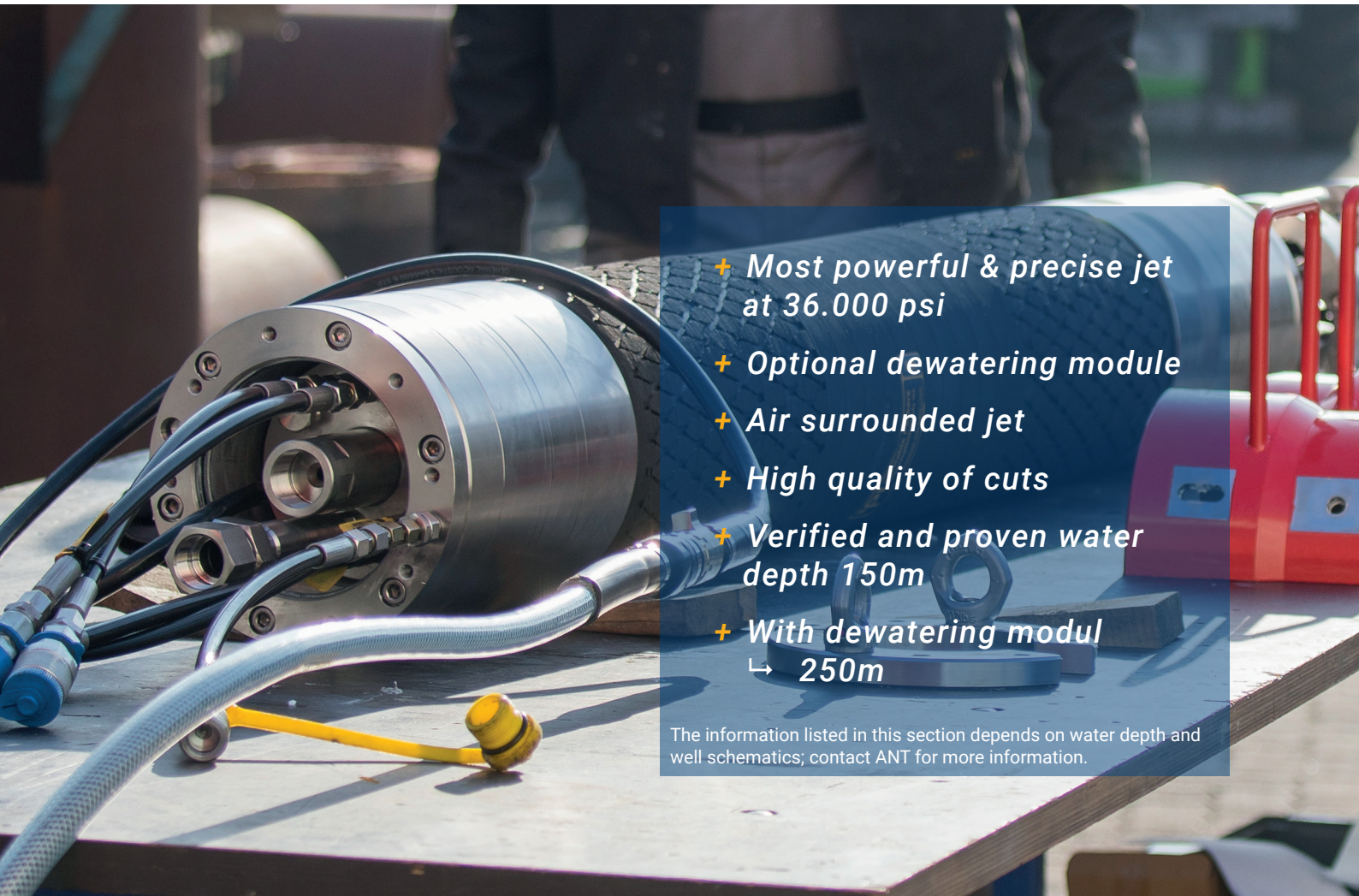
ANT systems basically consist of a high-pressure pump (HPP), an Abrasive Mixing Unit (AMU), high-pressure hoses, a cutting device and a cutting nozzle.

BECAUSE WE CAIR

Repair and dismantling of offshore structures.
Remote operated verhicles (ROVs) and remote controlled cutting devices 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 most powerful in the world with the smallest footprint – is therefore particularly in demand for offshore work.





+ *Most powerful & precise jet at 36.000 psi*
+ *Optional dewatering module*
+ *Air surrounded jet*
+ *High quality of cuts*
+ *Verified and proven water depth 150m*
+ *With dewatering modul*
  ↳ *250m*

The information listed in this section depends on water depth and well schematics; contact ANT for more information.

OUR TECHNIQUE FOR DECOMMISSIONING

Multistring Casings



DCH I
7″

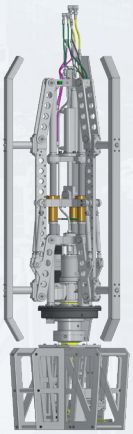


DCH II
9 5/8″ - 20″

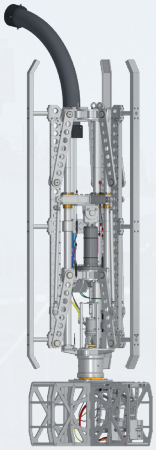
Piles



PCH MK2
16″ - 36″



DCH III MK3
30″ - 72″

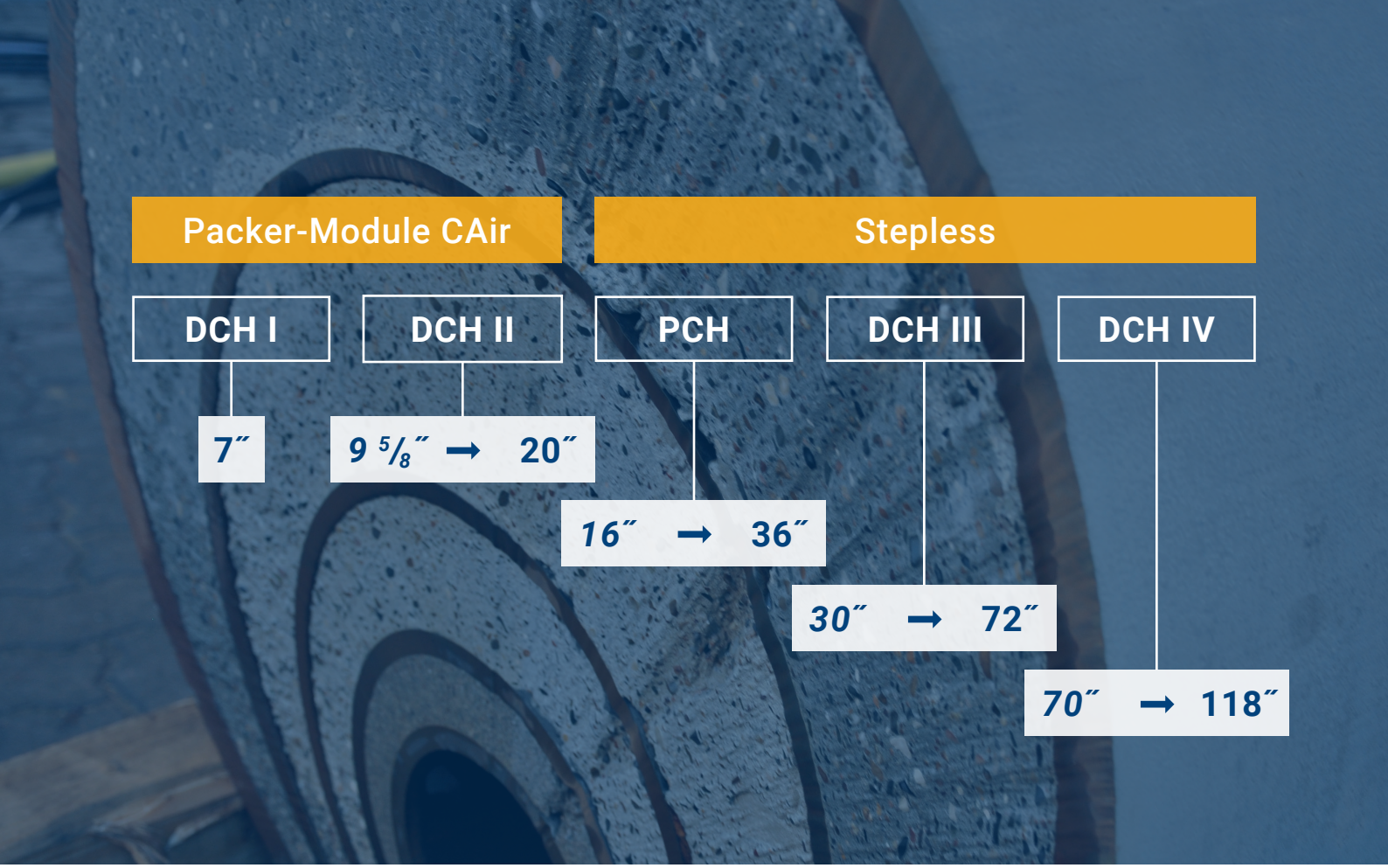


DCH IV
70″ - 118″

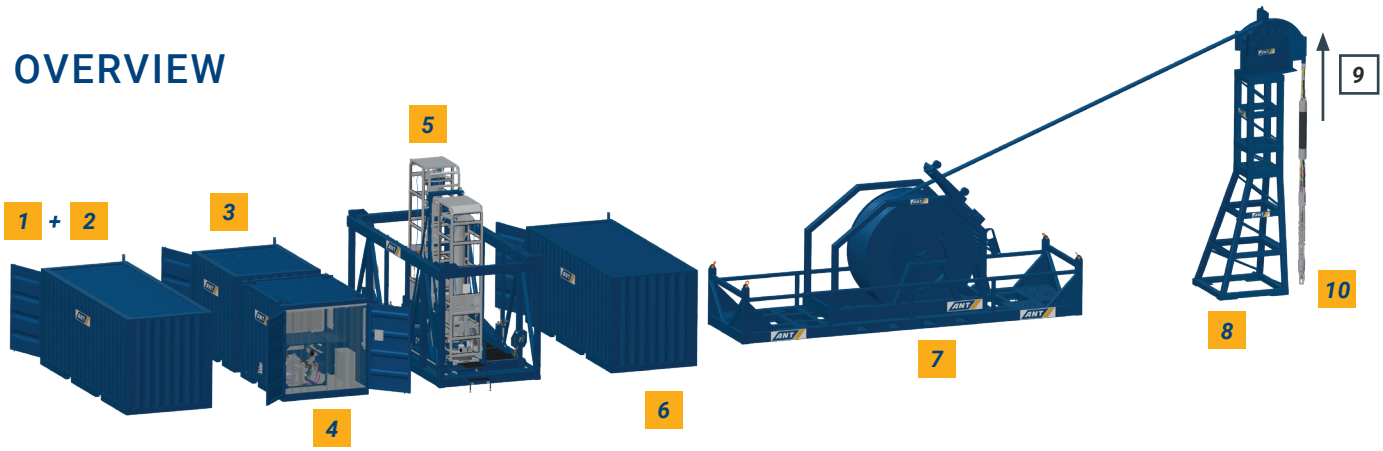
Sustainable Repair



Chain Manipulation System



OVERVIEW



ITEM	Container size	Weight approx.
1. Working Container* + 2. Abrasive 4 tons [20']*	20' Container, ~14 m²	3,1 tons + 4,0 tons
3. High Pressure Pump [10']	10' Container, ~7 m²	8,0 tons
4. Control System + Hydraulic Power Unit [10']	10' Container, ~7 m²	7,3 tons
5. Abrasive Mixing Unit's Lifting Frame (2x AMUs, Lifting Device, Frame, HPU (with external Switch Box))	22' Lifting Frame, ~20 m² Switch Box: ~1 m²	18,4 tons
6. Air Compressor [20']*	20' Container, ~14 m²	12,9 tons
7. Winch*, Umbilical + 8. A Frame / Gooseneck*	32' Lifting Frame, ~24 m²	19,1 tons
Summary full spread	**Total footprint: ~87 m² (~1000 sq feet)**	**Total weight: ~73 tons**
9. External tugger wire e.g. Lifting Frame		
10. E.g. Downhole Cutting Head (DCH) 1 or 2, mounted on Skid	Skid: ~3,2 m x 0,72 m x 0,95 m Storage Container provided by customer	0,45 tons (each)

*Can be provided by customer

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

Performance and verification can only be achieved under known conditions concerning water depth and well schematics; contact ANT for more information.

CUTTING EXAMPLES



- Offshore job in the GoM
- Water depth 60`/ 20m
- Eccentric Casing setup
- partly 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 60°/h
- Cutting time 8h

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





- Mock-up test
- Water depth 15`/ 4m
- Centric Casing 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 52 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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