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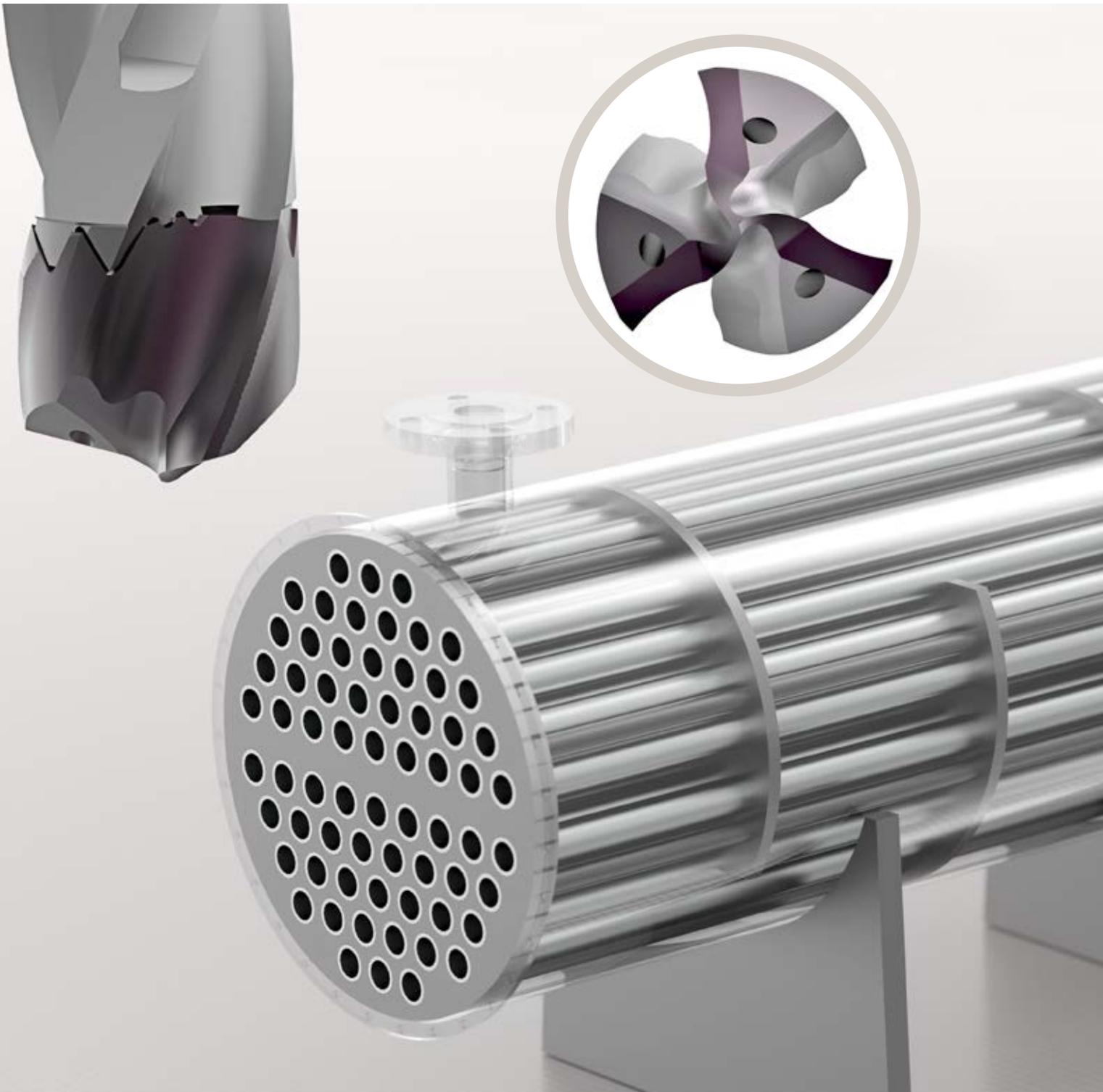
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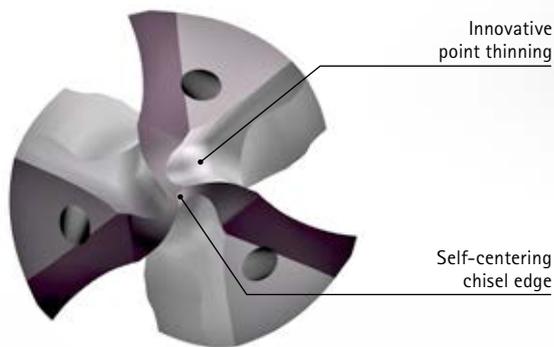
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## SHELL AND TUBE HEAT EXCHANGER MACHINING



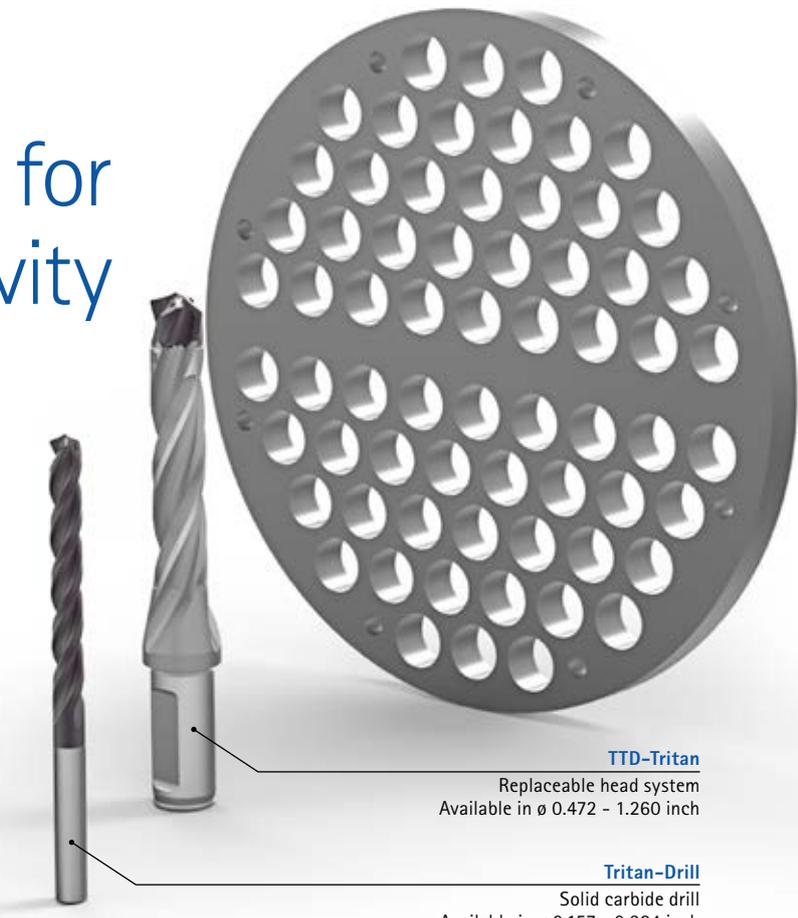
# Three cutting edges for even more productivity

When drilling hundreds of holes in a carbon steel tube sheet, choosing the right drill is critical to success. With the new TTD-Tritan, MAPAL presents the first triple cutting edged replaceable head system, which is sure to impress through its dynamism, performance and precision – even under the most difficult drilling conditions. Fast and reliable chip removal is also achieved by the ground chip flutes and the shape of the main cutting edge that ensures short, tightly rolled chips.



Innovative point thinning

Self-centering chisel edge



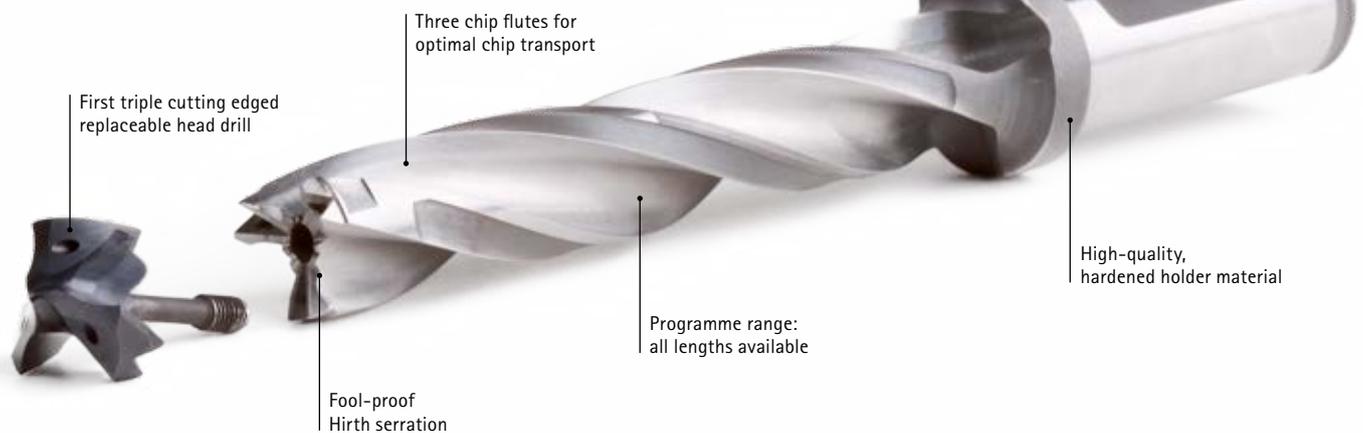
**TTD-Tritan**

Replaceable head system  
Available in  $\varnothing$  0.472 - 1.260 inch

**Tritan-Drill**

Solid carbide drill  
Available in  $\varnothing$  0.157 - 0.984 inch

Cylindrical shank with clamping flat ensures secure clamping and optimal force transmission



First triple cutting edged replaceable head drill

Three chip flutes for optimal chip transport

Fool-proof Hirth serration

Programme range: all lengths available

High-quality, hardened holder material

## Highest performance with MAPAL chucks:



The MAPAL HighTorque Chuck (HTC) impresses due to high torque transmission and guarantees long tool lives. These hydraulic chucks are available from stock for different machine interfaces, e.g. HSK, SK, JIS-BT, CAT, etc.

## AT A GLANCE

- $\varnothing$  0.157 - 1.260 inch
- Universal application (steel, cast iron)
- With internal cooling
- Innovative point thinning
- Self-centering chisel edge
- Maximum positioning accuracy

Watch our product video: [TTD-Tritan](#)

[www.mapal.com/TTD-Tritan](http://www.mapal.com/TTD-Tritan)

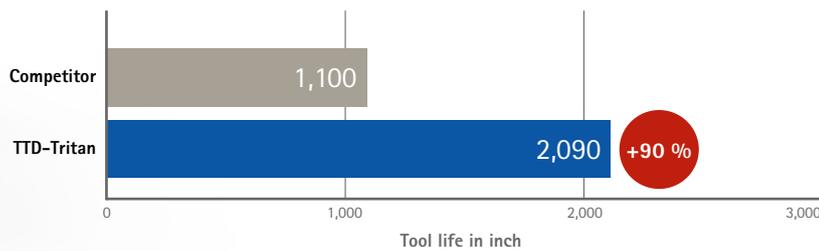


# Practical test

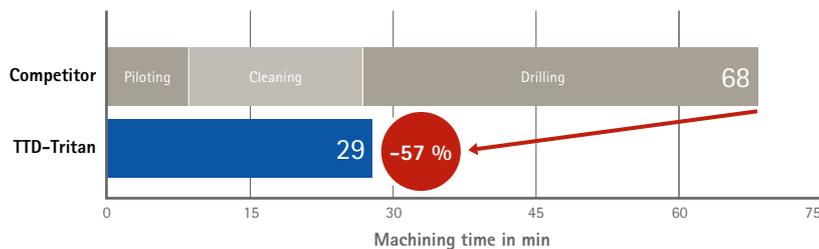
Material: Carbon steel / SA-516-70N  
 Machine: QuickMill Intimidator 120  
 Spindle interface: CAT 50  
 Diameter: 1.008" (25.6 mm)  
 Hole depth: 2.5"

Cutting data	TTD-Tritan	Competitor product Two fluted exchangeable head system
$v_c$ in ft/min	518	508
$f_n$ in inch/rev.	0.028	0.018
$v_f$ in inch/min	54.1 <b>+59 %</b>	34

## Tool life



## Machining time



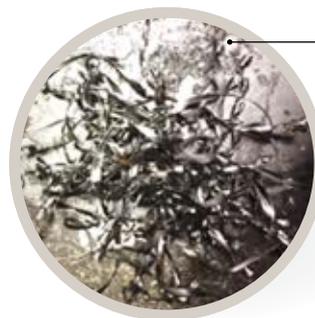
Owing to the high feeds of the TTD-Tritan, the machining time has been significantly reduced. A mere **29 minutes** were required for these **550 bores** to be produced in the practical test.

## Chip comparison



### TTD-Tritan

- 100 % chip control
- Low cutting pressure
- Short, tightly rolled chips



### Competitor

- Long, uncontrollable chip formation

## KEY BENEFITS

### Maximum performance

- 50 % - 100 % higher feed  
Thanks to three cutting edges
- High process security  
Fool-proof Hirth serration
- Excellent chip breaking  
Innovative point thinning
- Maximum positioning accuracy  
Self-centering chisel edge
- Low cutting pressure  
Unique lead geometry
- Extremely economical  
Replaceable head system



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