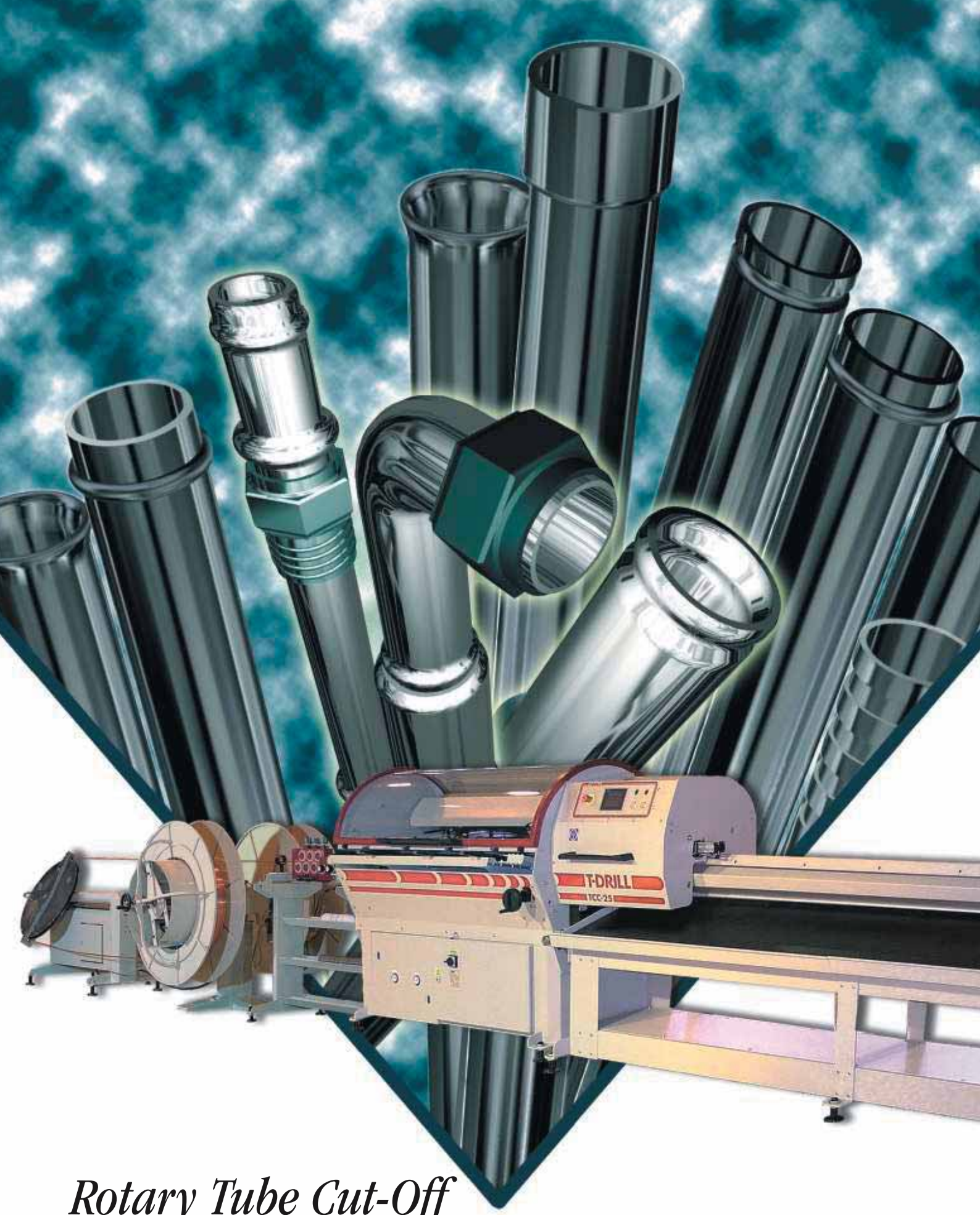

Rotary Tube Cut-Off

T-DRILL

05/11 2005

TUBE CUT-OFF

Cutting Edge Technology by

Rotary cut-off eliminates chips, scrap and the need for washing parts. Compared to sawing, it is fast, quiet and a far more accurate high volume method for cutting tubes to length. The material savings can also be significant, because the rotary blade doesn't remove tube material like a saw does.

Minimum I.D. reduction is of vital importance for secondary operations such as mandrel bending. With the T-DRILL automatic cut-off machines you achieve exceptional quality and a production speed superior to any other method.

TCC-25

The TCC-25 is an automated tube cutting station offering cut capacity up to the O.D. of 25 mm (1"). With a minimum cut length of 50 mm (2") the station uses the "Pull-Apart" method and with shorter cut lengths it cuts straight through.

The settings for lengths and quantities are set from an easy-to-use touch screen panel. The screen also offers important information for service purposes, such as I/O indicators and failure diagnostics on clear text.

The TCC-25 is the perfect solution when cutting smaller diameter tubing.

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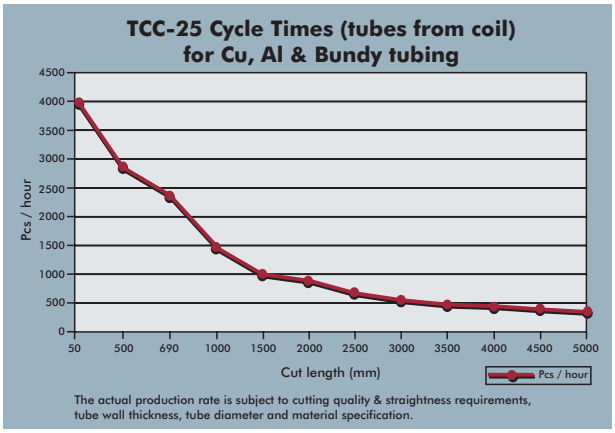
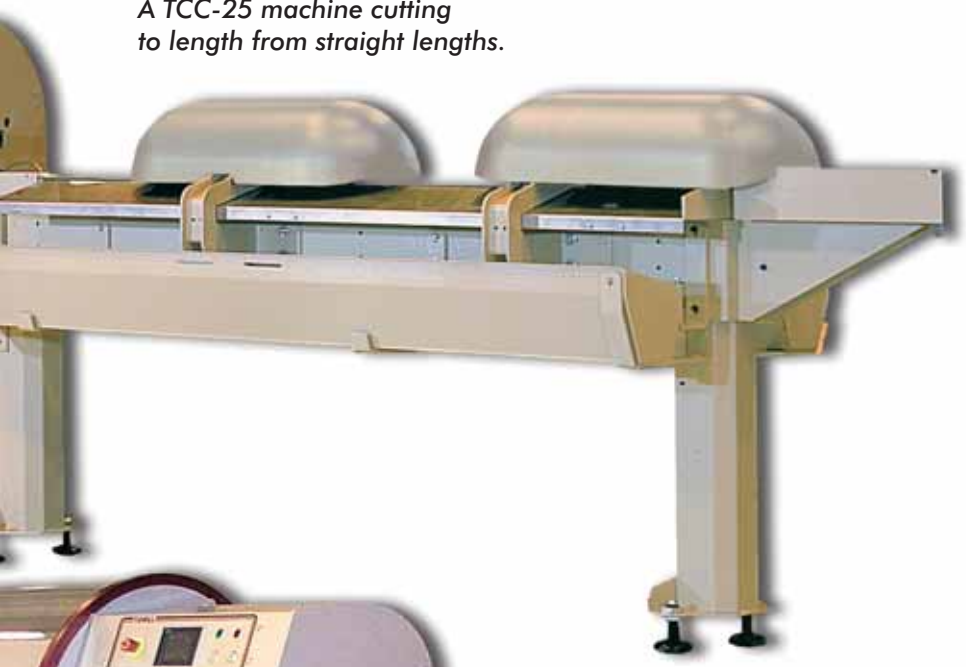


A TCC-25 machine cutting to length from straight lengths.



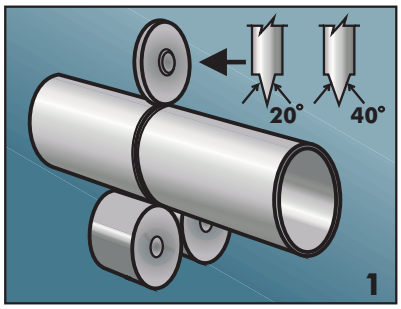
Typical Applications

There is a growing number of rotary tube cut-off applications. The method is used, for example, in:

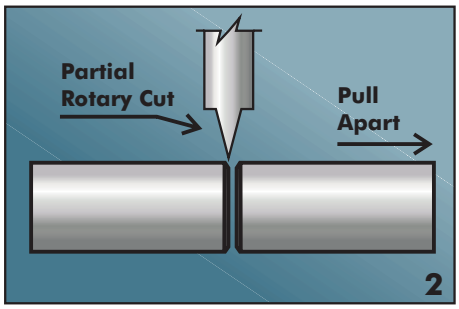
- heat exchanger applications
- air conditioning
- heating
- refrigeration
- solar technology
- automotive fuel and brake lines

A TCC-25 machine cutting to length from coil.

User friendly operator interface.



1. In rotary tube cutting, the cutting blade is supported by backup rollers as it is automatically fed at a controlled rate to cut the tube.



*2. A powered movement of the outboard clamp **pulls the tube apart** after it has been cut about 95 % of the way through. This method is used for short cut lengths.*

TCC-50

The automated cutting station, TCC-50, accepts a wider O.D. range up to 45 mm (1.77”).

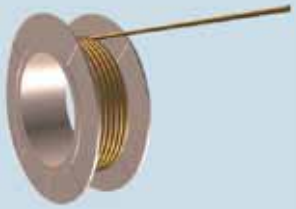
A TCC-50 machine cutting to length from straight lengths.

In-Line End Forming

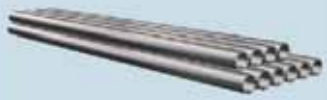
TCC-45-EF3 offers an ultimate solution for high speed tube cut-off and simultaneous single-end end forming up to 3-hit capability.

A TCC-45-EF3 machine cutting to length from coil equipped with an integrated end former.

TUBE CUT-OFF



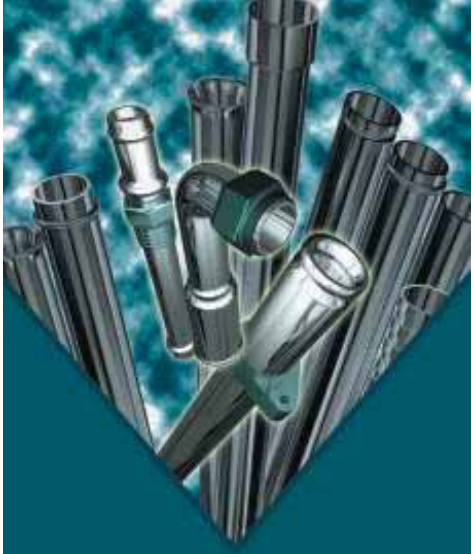
General Capability	TCC-25	TCC-50 HF
Material (typical)	Copper, aluminium, steel, stainless steel	Copper, aluminium, steel, stainless steel
Minimum cut length	3 x diameter	3 x diameter
Maximum cut length	7000 mm / 25'	7000 mm / 25'
Minimum diameter	Ø 1,5 mm / .06"	Ø 1,5 mm / .06"
Maximum diameter	Ø 25 mm / 1"	Ø 45 mm / 1.77"
Minimum wall thickness	0,5 mm / .02"	0,5 mm / .02"
Maximum wall thickness	2,5 mm / .10"	2,5 mm / .10"
Cut length tolerance	±0.1 mm / ±0.005"	±0.1 mm / ±0.005"
Tubes from Coil		
Minimum diameter	1,5 mm / .06"	1,5 mm / .06"
Maximum diameter	22 mm / .87"	22 mm / .87"
Cut length straightness	2 mm/1 m / .010"/12"	2 mm/1 m / .010"/12"
Typical production rates	2000-5000 pcs/h depending on cut length material and required cut quality	1300-2200 pcs/h depending on cut length material and required cut quality



Tubes from Straight Lengths		
Stock lengths	3-6 m / 10'-24'	3-6 m / 10'-24'
Minimum diameter	Ø 4.70 mm / 3/16"	Ø 7 mm / 1/4"
Maximum diameter	Ø 25 mm / 1"	Ø 45 mm / 1 5/8"
Number of cut lengths	3 lengths from one stock length	2 lengths from one stock length
Typical production rates	1000-4000 pcs/h depending on cut length material and required cut quality	800-1300 pcs/h depending on cut length material and required cut quality

Cut-Off with In-line End Forming: TCC-45-EF3	
Type of end former	Hydraulic, 3-hits. Forms the lead end of tube simultaneously during cut-off cycle.
Cutting + end forming	Tubes from coil
Minimum diameter	Ø 6 mm / 1/4"
Maximum diameter	Ø 22 mm / 7/8"
Material	Copper, aluminium, other materials on request
Minimum cut length	40 mm / 1.57"
Maximum cut length	2000 mm/79"
Typical production rates	1-hit: 800-1200 pcs/h 3-hits: 450-600 pcs/h 2-hit: 500-900 pcs/h

The information in this brochure is subject to revision without notice.



TUBE CUT-OFF

Customized Production Process Solutions

The T-DRILL rotary cut-off stations can be integrated into a wide variety of tube manufacturing processes. Here is just one possible layout idea.

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