

HV CCV Lines for High Voltage Cables



TROESTER

EXCELLENCE IN EXTRUSION.

HV CCV Lines for High Voltage Cables

The HV-CCV Lines developed by TROESTER make possible the cost-effective production of high-grade medium voltage (MV), high voltage (HV) and extra-high voltage (EHV) cable on the same Catenary Continuous Vulcanization Line (CCV Line).

The »TWINROT« System.

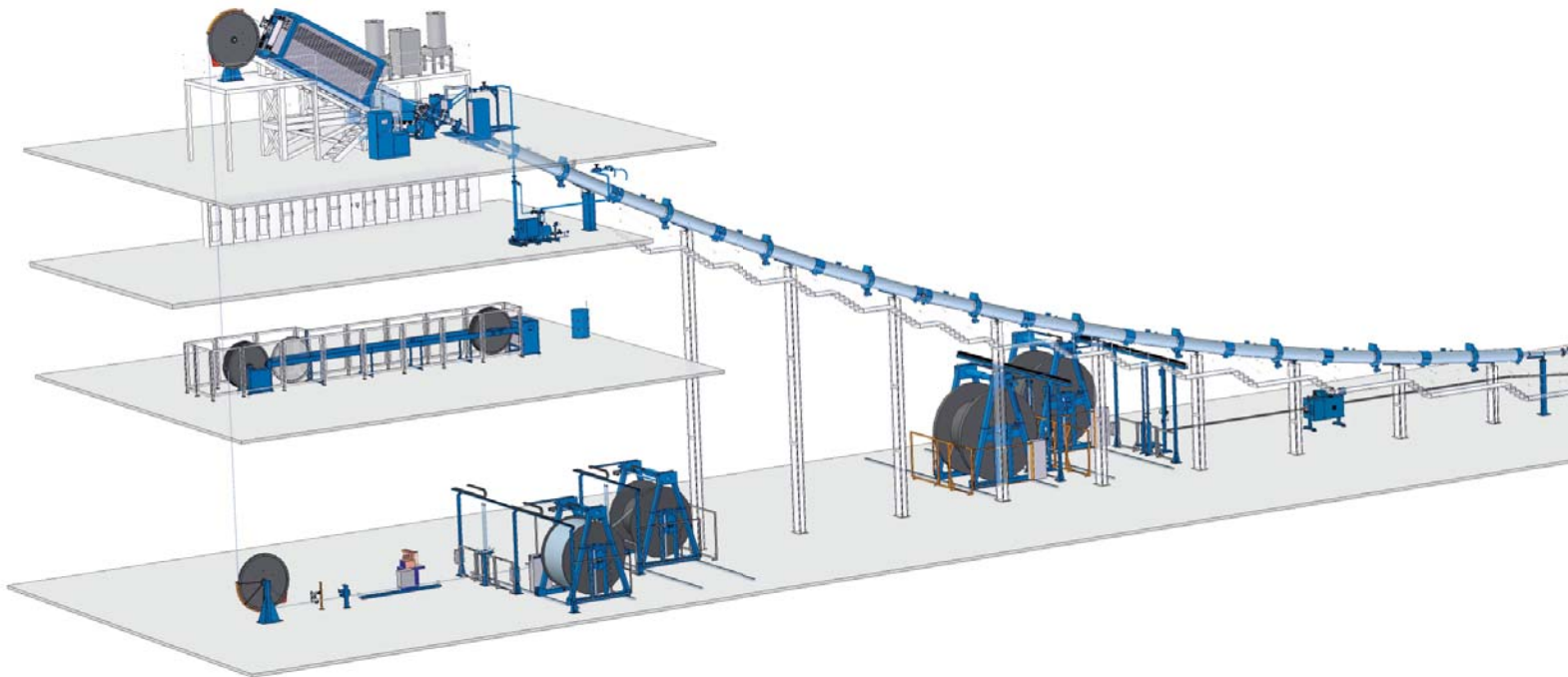
The TWINROT double rotation system uses two rotating caterpillars specially developed for this application, simultaneously functioning as haul-off and rotating elements. One rotating caterpillar is used prior to the conductor entering the cross head, the other after the cooling section of the CV tube.

To counter the unavoidable "peardrop" effect of the still viscous insulation layer at the start of the heating zone, the »TWINROT« System rotates the cable from both ends of the CV tube.

The »TROSS« System.

To ensure highest flexibility for the power cable manufacturers to respond to growing demands for more powerful HV and EHV cable designs, Troester ROUNdness Stabilization System TROSS is used to support above double rotation technique.

TROSS is based on the principle that the hot and viscous cable surface is stabilized after its exit from the cross head by controlled temperature profile through separate gas circulation.



This double rotating technique, i.e. rotation of both caterpillars, clearly reduces the torsional stress overruling the tractive force, without losing rotation; this is important for the jointing method, especially for heavy conductors.

The conductor is twisted up to the pressed laying of the individual wires of the top layer. Years of experience installed »TWINROT« Systems have shown in practice, that milliken conductors and taped conductors can be used without problems.

A further advantage of the »TWINROT« System is that the double rotating technique can also be used to increase the quality of medium voltage cables. The rotating caterpillars developed for the »TWINROT« System, are designed so that the traction belt grip the conductor or cable at equal pressure along the whole of the contact length. Each caterpillar is equipped with frequency controlled A.C. motors for the belts, and one frequency controlled A.C. motor for rotating. The haul-off and rotating elements are independently controllable.

Main Advantages of the »TWINROT« and »TROSS« System

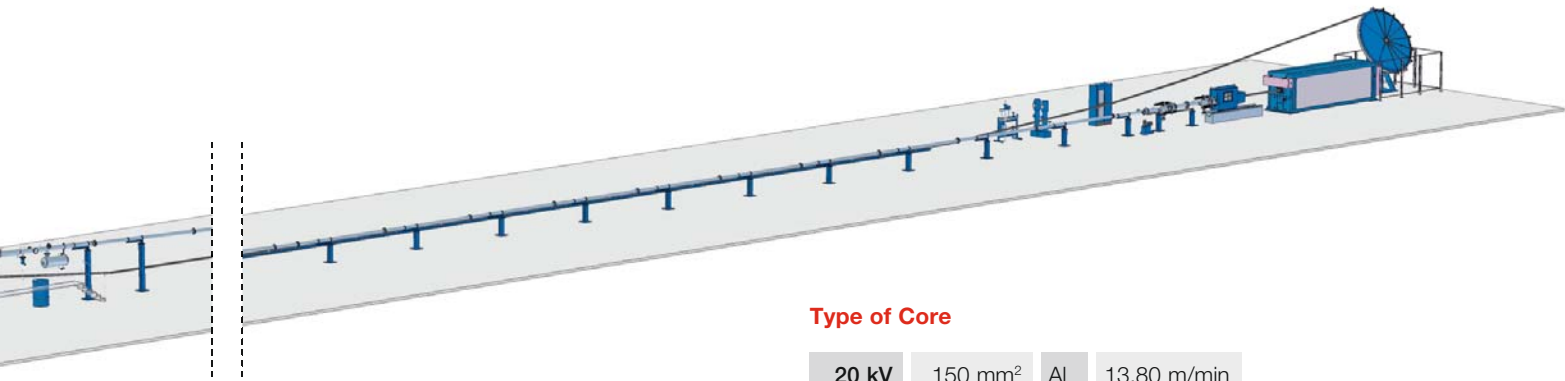
- > Unique technology to respond flexibly to different HV cable designs with regard to the manufacturing process
- > Minimized dropping effect and reduced scrap cable length by immediate rotation and fixing the cable surface immediately after exit from the cross head
- > Usage of standard insulation materials
- > Designed for highly compacted, taped and milliken conductors
- > Gentle cable production with low torsional stress of isolation
- > Additional compacting of stranded conductors prior entry into the cross head
- > Upgrade possibilities of existing CCV line with the »TWINROT« and/or »TROSS« system



Extruder Group



TROSS



Type of Core

20 kV	150 mm ²	Al	13,80 m/min
25 kV	2 AWG	Al	16,90 m/min
110 kV	630 mm ²	Cu	1,75 m/min
220 kV	1200 mm ²	Cu	0,90 m/min
400 kV	1600 mm ²	Cu	0,55 m/min

Line Speed
Examples



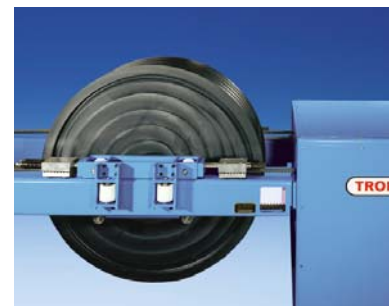
Rotating Caterpillar RAGG



Portal Winder AWB



Screw Extruders PXA
(High-Output Concept)



Horizontal Motorized Accumulator
HMS





Rotating Caterpillar RAGG

More Advantages of the TROESTER CCV Line Concept

- > Long production runs
- > High production speed by High-Output Concept
- > Minimized scrap length through flexible endseal and lead wire seal technique and temperature controlled starting/stopping of the line
- > Fast product change through
 - Online centering of the cross head
 - quick tool change in 15 min supported by special toolings
 - flexible sealing concepts
- > Environmental friendly components: gas filtering system, by-product collection, low energy resistance heating

Line Characteristic (Example High-Output Concept)

Voltage class	kV	10 - 500
Conductor cross section	mm ²	95 - 3250
Wall thickness		
Inner semi-conductor	mm	0,4 - 3,0
Insulation	mm	3,4 - 35,0
Outer semi-conductor	mm	0,4 - 3,0
Cable diameter max.	mm	145
Cable weight max.	kg/m	40
Length of the line (Heating section / Tube length)	m	110 / 300
Line speed max.	m/min	45
Extruder group		
Extruder		PXA 90 / 2x150 / 90
Triple cross head		TQu 100 X



Triple Cross Head TQu

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