

## OPTIONAL

- ◆ Automatic loading/unloading
- ◆ Storing buffer for loading/unloading
- ◆ Thermal regenerator
- ◆ Post-Burner Unit
- ◆ Pieces Automatic Identification and Setting

### TF TRICKLING/RING

Rate: 140 stators / hour (max Ø140 mm)  
250 rotors / hour (max Ø 70 mm)

Dimensioni: 10,5 x 2 x h 2,3 m

### TF TRICKLING/PERFORMANCE

Rate: 150 stators / hour (max Ø 140 mm)  
100 stators / hour (max Ø 220 mm)  
300 rotors / hour (max Ø 70 mm)  
150 rotors / hour (max Ø 100 mm)

Dimensioni: 7,65 x 2 x h 3,2 m

### TF TRICKLING/HIGH PERFORMANCE

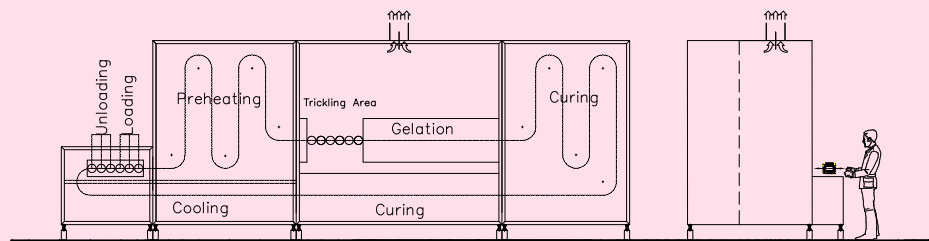
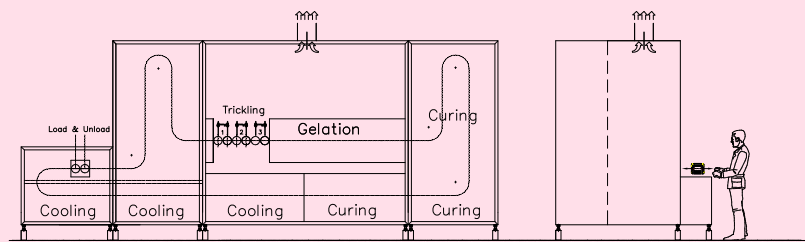
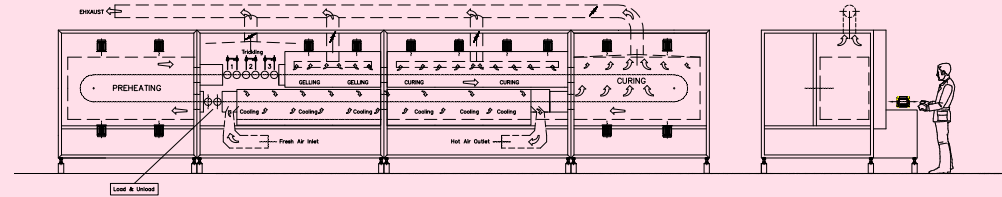
Rate: 200 stators / hour (max Ø 140 mm)  
130 stators / hour (max Ø 220 mm)  
350 rotors / hour (max Ø 70 mm)  
180 rotors / hour (max Ø 100 mm)

Dimensioni: 9,3 x 2 x h 3,2 m

# DATA SHEET TF TRICKLING LAY OUT

## IMPREGNATION LINES FOR ELECTRICAL WINDINGS

## TF TRICKLING



RING

PERFORMANCE

HIGH PERFORMANCE

TECNOFIRMA® IS A COMPANY OF THE TT-TECNOFIRMA TEAM GROUP, LEADER IN THE SURFACE TREATMENT FIELD..

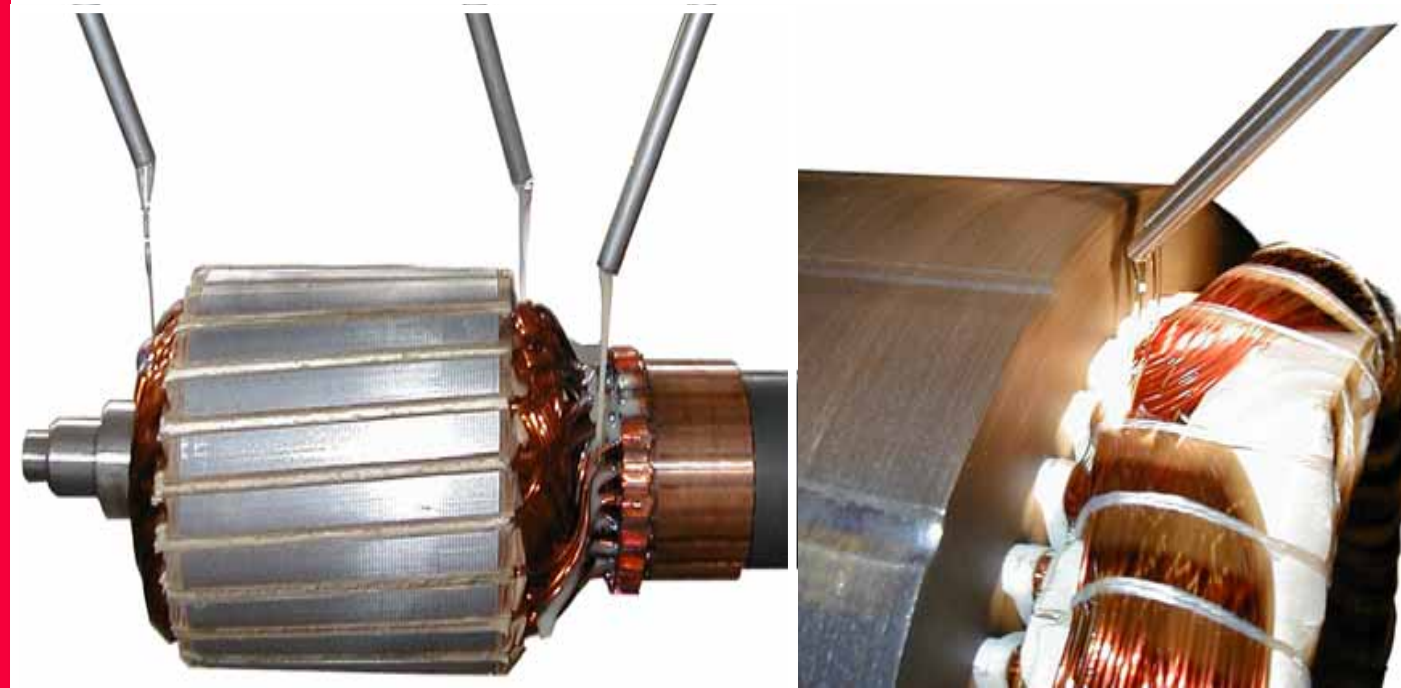
TECNOLOGY & INNOVATION FOR OVER FIFTY YEARS

BESIDES STANDARD LINES, TECNOFIRMA IS SPECIALISED IN DEVELOPING CUSTOMIZED SOLUTIONS TO FULFIL SPECIFIC CUSTOMERS NEEDS.



HARMONY OF COLOURS, DEPTH OF TREATMENT

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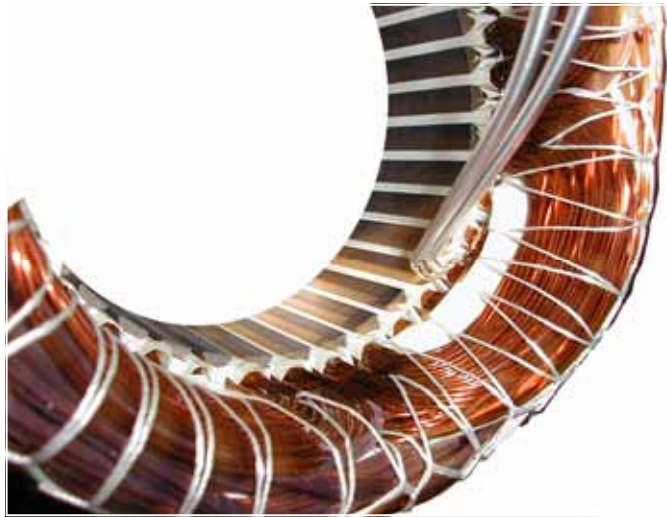
WASHING & PAINTING MACHINES

## THE TRICKLING IMPREGNATION METHOD

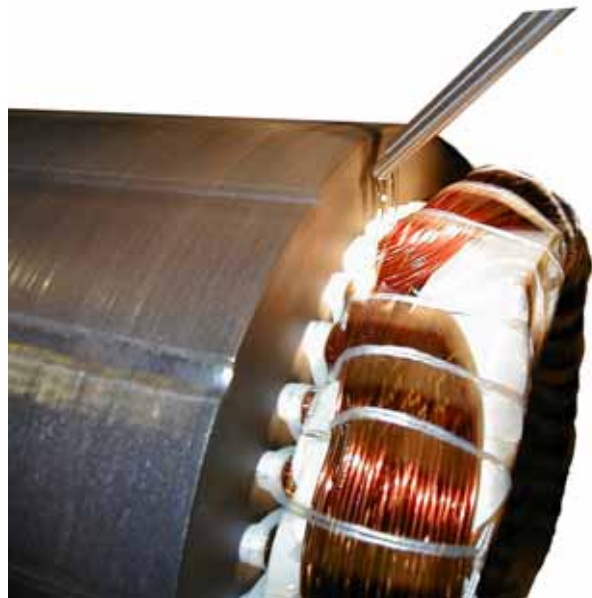
The "Trickling" impregnation method is considered as the most effective impregnation system for electrical windings, both for rotors and stators.

The components are positioned & fixed horizontally on auto-centring chucks. These chucks allow the components to rotate constantly on the central axis and they carry them through the different phases of the impregnation process (preheating, trickling, gelation, polymerization and cooling).

Depending on the component size and on the process requirements, the rotation speed—which plays a major role for a good resin penetration – is electronically controlled through the whole process, paying special attention to the trickling and gelation areas.



The impregnation area is composed of one or more trickling stations equipped each one with a series of drippers, strategically positioned on the parts in order to impregnate them on specific areas and facilitate accurate impregnation whenever this is needed by the process. The resin flows through the drippers by one or more pumping groups.



Thanks to the accurate control of impregnation parameters (resin volume, parts rotation speed, temperatures and times), the system can apply the resin with maximum accuracy, using the capillarity principle, ensuring maximum absorption and avoiding resin dropping from the parts.

The component constantly rotates, during both the trickling and the gelation phase, so the liquid product (resin) applied penetrates evenly and fully in the component windings (slots and heads), getting high levels of solids content after polymerization.

The result is a perfectly impregnated winding, particularly and specifically in the areas where impregnation is needed

(winding slots & heads). The "Trickling" system is particularly used for all products where thermodynamic stresses are relevant and strong in their service.

# IMPREGNATION

## PRODUCTS

## DESIGN

## BENEFITS

## APPLICATION FIELDS

### APPLICATION FIELDS

- ◆ Electrical motors (stators and rotors)
- ◆ Electrical Generators (stators and rotors)
- ◆ Bobbins
- ◆ Automotive



### BENEFITS OF THE TRICKLING METHODS

The technology used in Tecnofirma Trickling systems complies with the best quality, reliability and automation standards. These features result in several advantages by the trickling impregnation method;

- ◆ High-quality of the impregnation
- ◆ No afterworks after process
- ◆ Maximum resin filling on the winding slots
- ◆ Very high Bond-Strength standards
- ◆ Excellent resin penetration in the whole winding
- ◆ Short process times
- ◆ High productivity
- ◆ Possibility to use resins with or without monomers

### DESIGN

The *TF TRICKLING* series is designed to combine user friendliness, flexibility and environmental friendly.

All components were chosen for their reliability and safety. The heating systems are designed to ensure excellent process and energy saving performances.

All impregnation parameters are controlled by PLC. If different products undergo the impregnation process ("Random" production mode), you can set the following specific parameters for each single component;

- ◆ Component rotation speed
- ◆ Trickling time, station by station
- ◆ Resin pump speed
- ◆ Drippers positioning on the component, station by station

### IMPREGNATION PRODUCTS

Tecnofirma® *TF Trickling* systems are designed and realised in order to use Traditional polyester, No-Solvent Polyester, Epoxy and Epoxy-Phenolic Resins, and all other medium-high performance products suitable for this impregnation method.

The operator can easily change process data in order to comply with the product manufacturer's instructions.