FINNING MACHINE TO WRAP STRIP AROUND A TUBULAR ELEMENT OR TUBE

WATCH THE VIDEO

This machine wraps strip around a tubular heating element or tube forming a fin around it, starting from a coil with a certain width and thickness.

The pitch of the fins and the rotational speed of the tube can be set on the machine through an operator panel.

Summary

MACHINE COMPOSITION

The machine consists of:

- Support for the elements before finning
- Finning head
- Horizontal dereeler
- Crinkling device
- Finning carriage
- Unloading section

The machine is supplied complete to wind one diameter of element with one strip width. Additional tooling is available.

OPERATION

The operator places the elements on the element support section. He then presses the start push button on the operator console to bring the winding carriage into the start or loading position (the loading position of the finning car is set through the operator interface so as to give the correct gap between the end of the tube and the first fin). The operator then opens the protected section on the element support table places an element in it and pushes the element forward until it goes through the finning head. The latter has already a piece of "coiled fin". The element is further pushed forward until it is pushed against the stop on the rotating mandrel of the finning carriage.

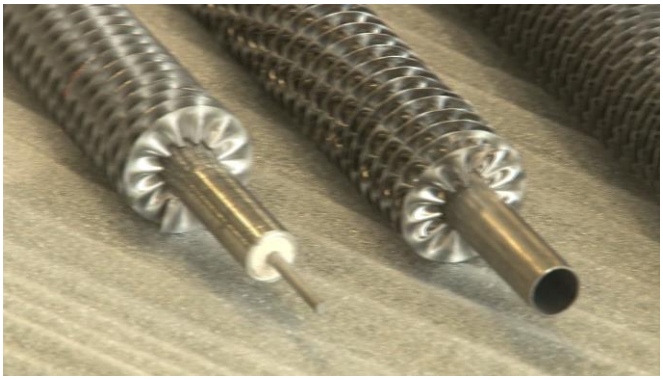
Winding including the welding of the first fin to the tube sheath
When the tube is resting against the stop (in the mandrel) the operator closes the jaws of the mandrel. If the finning process requires welding within the cycle then the picks up the weld gun (not included) and tacks the end of the first fin the sheath. Then he closes the door and the finning operation starts.

Winding with welding of the fin outside the machine
If on the other hand welding is to be done while finning or as a separate operation (giving a high productivity for the finning machine) the operator can just push the element until it is resting on the stop in the rotating mandrel, closes the door, and starts the cycle.

When the start signal for finning operation is given the clamp closes around the element and the finning carriage starts to move back (away from the finning head) with the rotational speed set on the program and with a linear speed such as to give the required pitch. It is possible to set a speed for a section at the beginning and at the end on the element and another for the section in between and the machine executes the variations in automatic without stopping. At the end of the finning operation, the machine stops with the element still clamped and depending on the mode of operation the following takes place:

Winding including the welding of the last fin to the tube sheath
The operator opens the safety door, clamps the fin on the end, welds and then cuts the fin, removes the clamp and closes the door. Presses the start button and the machine finishes the cycle that is, moves further away from the finning head to extract the end piece from the loose fin loops on the finning head. Then the clamp on the rotating head opens, a blocking system is activated to keep the element fixed while the head still moves back to free the frond end of the element. Once the element is free on both ends the blocking system releases its hold on the element and the latter is offloaded onto the unloading tray.

Winding with welding of the fin outside the machine



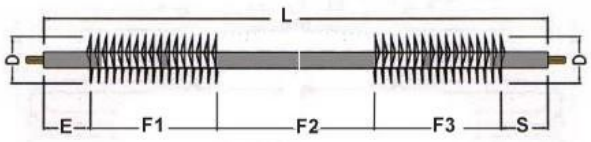
The operator opens the safety door, cuts the fin and closes the door. Presses the start button and the machine finishes the cycle that is, moves further away from the finning head to extract the end piece from the loose fin loops on the finning head. Then the clamp on the rotating head opens, a blocking system is activated to keep the element fixed while the head still moves back to free the frond end of the element. Once the element is free on both ends the blocking system releases its hold on the element and the latter is offloaded onto the unloading tray.

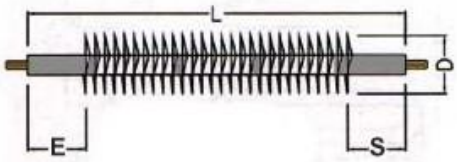
Once either of these two modes of operation is finished the operator presses the start push button to move the finning carriage to the start position.

When it stops the operator opens the door and another element can be fed through, and the whole sequence is repeated.

The operator can set electronically through the operator interface,

- Winding speed
- Winding Pitch (single) or different finning pitch at different positions (multiple pitch)
- Starting and finishing position
- Speeds for the different sections of the element
- Multi section finning





Set up

Element diameter

Need to change the clamp jaw on the finning carriage and set the height of the fin roll on the finning head.

Adjust amount of crinkling mechanism
Change element support in finning head

Fin height

Change fin roll
Adjust crinkle mechanism

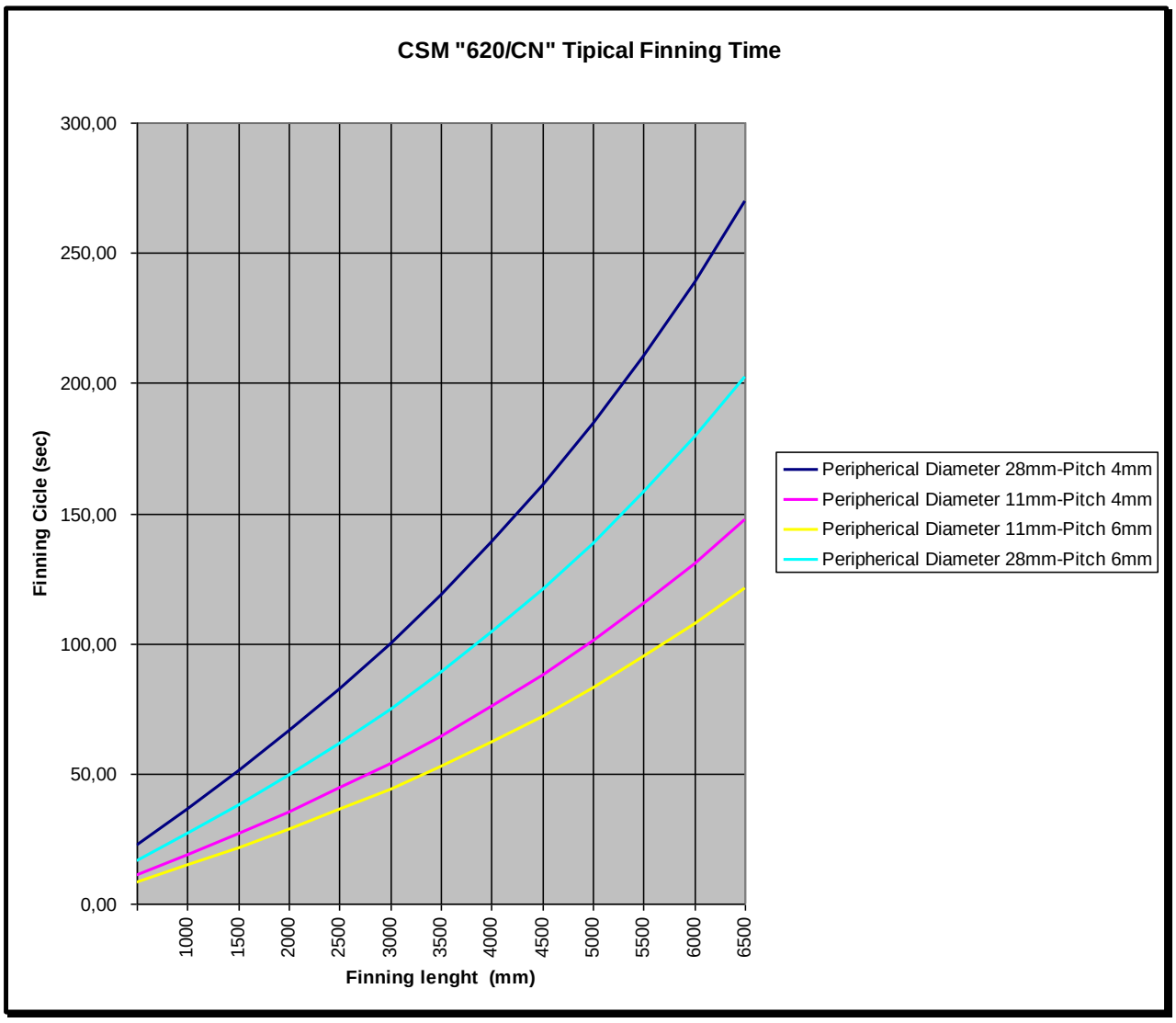
Fin Pitch and Rotational Speed

Parameters set in operator console

TECHNICAL CHARACTERISTICS

Tube material		mild steel, stainless steel
Tube diameter	mm	6-16
Minimum tube length	mm	300
Min. tube thickness: -for tube to be finned For heating element to be finned	mm mm	1 0.40
Strip material		mild steel, stainless steel, copper
Strip width	mm	6-12
Strip thickness - mild steel, stainless steel,	mm	0.3-0.5
Finning pitch (adjustable)	mm	2-15
Winding speed (adjustable)	run/min	0÷1000
Power supply	V/Hz	to be defined
Pneumatic supply	Bar	6
Installed power	Kw	8
Dimensions	mm	7000x1800x1600h

Examples of productivity												
Finning Length (mm)												
1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000
Finning Cycle (sec) for Element with peripherical diameter ≈ 22mm . Pitch = 3mm												
24	38	53	69	85	103	123	144	166	191	217	247	279



AVAILABLE VERSIONS

Version with welder included:

- **Mod. 621/00.CN3000** – finning machine for elements or tube up to 3 meters
- **Mod. 621/00.CN4000** – finning machine for heating elements up to 4 meters
- **Mod. 621/00.CN5000** – finning machine for heating elements up to 5 meters
- **Mod. 621/00.CN6000** – finning machine for heating elements up to 6 meters

Version without welder:

- **Mod. 620/00.CN3000** – finning machine for heating elements up to 3 meters
- **Mod. 620/00.CN4000** – finning machine for heating elements up to 4 meters
- **Mod. 620/00.CN5000** – finning machine for heating elements up to 5 meters
- **Mod. 620/00.CN6000** – finning machine for heating elements up to 6 meters

Other dimensions are available from 1 to 8 meter

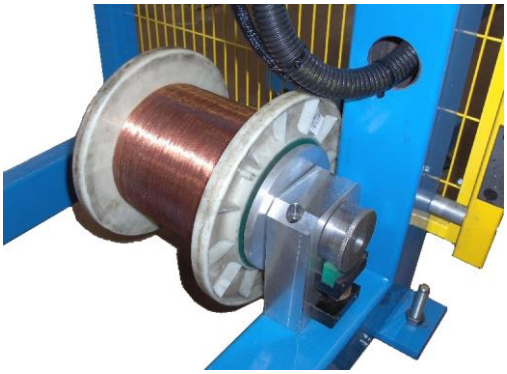
OPTIONS

Mod. 620/00.00001A – Tooling for different diameter of tube
Mod. 620/00.000012 – Set of finning wheels
Mod. 620/00.000014 – Set (2) of crinkling wheels

Mod. 620/00.000210 – Pneumatic device to press the ends of the tube to improve grip between tube and fin for tube thickness up to 0.5mm

Mod. 620/00.S40500 – Automatic strip de-reeler

Mod. 620/00.000140 – Spool support with braking system



LAYOUT

MOD. 620/00.CN5000 5 meter finning machine