

STALAM
Radio Frequency Equipment



The Radio Frequency drying technology



for textiles, technical textiles
and non-wovens

THE RADIO FREQUENCY DR



When a wet product is submitted to a radio frequency (RF) field, the electromagnetic energy is absorbed by the product due to the so called "dielectric losses", and its internal temperature increases. If a sufficient amount of RF energy is supplied, the water is converted into steam, which leaves the product; that is to say, the product gets dried.

The main characteristics of the heating/evaporation process carried out by means of a radio frequency field, are the following:

it is endogenous: this means that the thermal energy is not transferred into the product through its surface from an external heat source, but rather it is generated directly throughout its mass, in all (wet) points at the same time;

it is selective: in the sense that the energy of the electromagnetic field is absorbed mainly by the water and not by the product itself, so that the heat is generated only where there is water;

it can be controlled precisely: in the sense that the electromagnetic energy is absorbed in proportion to the water content of the product, so that by controlling the RF power it is possible to bring the moisture content down to the desired residual value.

DYEING TECHNOLOGY

SHORT DRYING TIME

HIGH PRODUCTIVITY

LESS FLOOR SPACE

BEST PRODUCT QUALITY

HIGH ENERGY EFFICIENCY

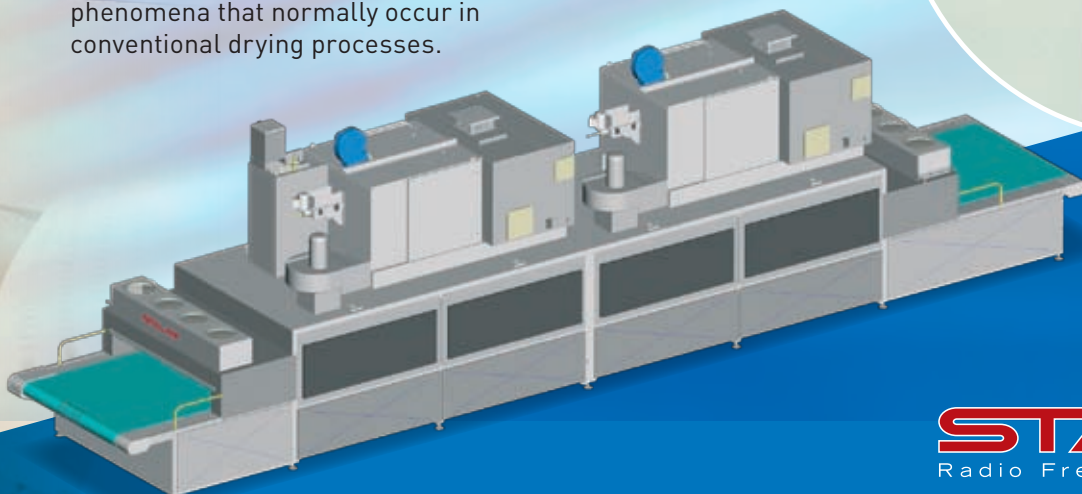
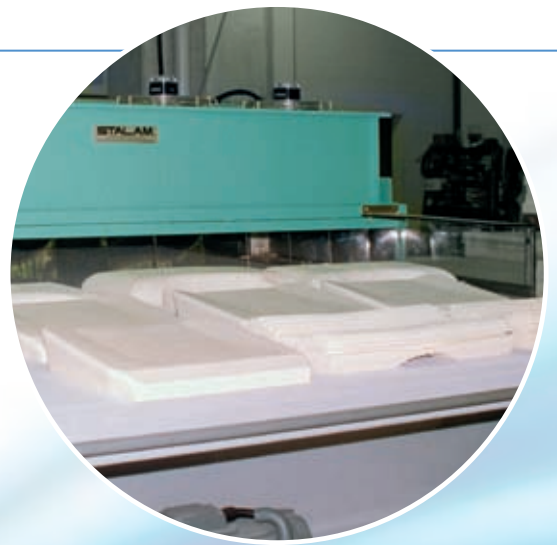
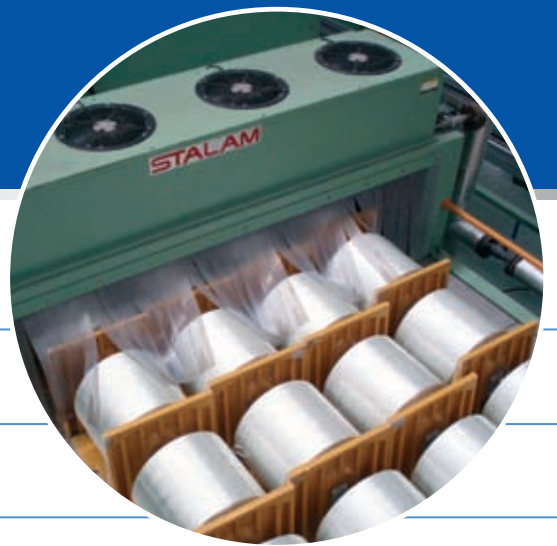
Thanks to these features, the drying of textiles, technical textiles and non-wovens after various wet treatments like dyeing, washing, padding, wet spinning, wet casting, vulcanising, felting, impregnating, coating, etc. by means of radio frequency has many advantages compared to the conventional hot air drying technologies, the most important ones being:

the high energetic efficiency and the high drying speed:

the electromagnetic energy is transferred directly to the whole of the wet product without losses to the surroundings, instantaneously, and it is entirely exploited for the drying process; furthermore, the energy transfer is not negatively affected by variable parameters such as the dimensions or the density of the product;

the outstanding quality of the dried products:

all problems (eg. temperature and moisture gradients, slowness) normally caused by the heat transmission phenomena are totally eliminated, so the product dries quickly and uniformly, down to the desired residual moisture level with a beneficial steaming and bulking effect of the substrate and without the typical surface (colour and physical-chemical properties) degradation phenomena that normally occur in conventional drying processes.



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PRODUCTION CAPACITY DATA FOR GLASS FIBRE DRYING

FIBRE COUNT	PRODUCTION CAPACITY (kg/h of dry fibre)								
	Roving weight: 14 kg			Roving weight: 18 kg			Roving weight: 22 kg		
<600 tex	275	400	550	350	525	700	425	650	850
600 ≤ x < 1800 tex	350	525	700	450	675	900	550	825	1100
≥1800 tex	425	650	850	550	800	1100	675	950	1350
No. of RF modules	2	3	4	2	3	4	2	3	4

PRODUCTION CAPACITY DATA FOR DRYING OF THICK FABRICS / NON-WOVENS / CONTINUOUS WEB MATERIAL

1xRF module, 60-105 kW output power

MOISTURE CONTENT	SPEED (m/min)		
20 %	10÷15	5÷7.5	2.5÷4
40%	5÷7.5	2.5÷4	1.5÷2
60%	3.5÷5	1.75÷2.5	1÷1.25
Product weight (g/m ²)	250	500	1,000
No. of RF modules**	1		

*(product width: 2 m)

**the speed depends by the number of modules
(2 modules = speed x 2, 3 modules = speed x3....)

PRODUCTION CAPACITY DATA FOR DRYING OF NATURAL LATEX / SBR & POLYURETHANE FOAM / WOOLEN FELTS

PRODUCT	PRODUCTION CAPACITY (kg/h of dry product)		
Natural latex / SBR foam (moisture content: 30-40%)	200-300	350-525	550-800
Polyurethane foam (moisture content: 60-80%)	120-180	200-300	320-460
Woolen felts (moisture content: 80-100%)	50-80	100-140	150-200
No. of RF modules	1	2	3

- 60-105 kW output power for: natural latex / SBR foam, polyurethane foam
- 40-60 kW output power for: woolen felts

