



The new Topstar roller coating machine.

CREDIT: GEMATA

Comparisons between rollcoating and spraying

Ten years after introducing the Jumbostar roller coating machine, which is claimed to have revolutionised the finishing process for whole hides for automotive interiors and upholstery, tannery machinery manufacturer Gemata presented the latest in its roller coating machine range, the Topstar, at its Open House event in April.

The new machine is the result of Gemata's search for a new finishing process for whole hides with low environmental impact. For the first time, the company says, the dream of applying both colour coat and top coat without spraying has become reality.

With the Topstar machine, it is possible to apply small quantities of chemical product (from between one and four grammes per square foot) evenly to any kind of leather, either smooth or embossed, without polluting dispersion in the environment.

Gemata now believes that by using the Jumbostar to apply stucco and base coat and Topstar to apply colour coat and top coat, whole hides for automotive interiors and upholstery can be completely finished without the use of spray systems.

"The entire roller finishing process allows important advantages for the surrounding environment," it states, "by drastically eliminating disposal of special waste and producing a substantial economic return for the tanning industries."

Table 1 Quantity of chemical product consumed with spray system

	Consumption of chemical product g/sq ft	Quantity applied g/sq ft	Quantity lost g/sq ft
1st sprayed base coat	20	13	7
2nd sprayed base coat	6.7	4	2.7
Sprayed intermediate (before embossing)	5	2	3
Sprayed colour coat	7.5	3	4.5
1st sprayed top coat	6.2	2.5	3.7
2nd sprayed top coat	6.2	2.5	3.7
Total	46.6 + (5 intermediate)	25 + (2 intermediate)	21.6 + (3 intermediate)

Table 2 Quantity of chemical product consumed with Jumbostar-Topstar

	Consumption of chemical product g/sq ft	Quantity applied g/sq ft	Quantity lost g/sq ft
1st Jumbostar pre-coating (stucco)	3	3	0
2nd Jumbostar coating	12	12	0
Topstar Colour coating	3	3	0
1st Topstar Top coating	2.5	2.5	0
2nd Topstar Top coating	2.5	2.5	0
Total	23	23	0



Compare and contrast

The machinery manufacturer has prepared an analysis of the economic advantages it believes the new system offers in the production of automotive leather, starting from buffed leather, compared to a spray finishing system.

With the application of the pre-coating (stucco) with the first coating using the Jumbostar machine, the final appearance of the leather is improved, gains in percentage yield and reduces the quantity of base coating to be applied, Gemata insists.

It contends that Italian tanneries, that usually work using three-booth spraying lines, apply an intermediate product to make the embossing process easier. With Jumbostar and Topstar the product is deposited on the hide without being dispersed in the environment, it states. Also, with the roller finishing system, the overspray produced in the spraying booths—which often affects the quality of the finished leather—is avoided. At the same time, it argues that the noise levels will be lower in a tannery equipped with the Jumbostar and the Topstar than in one with a spraying line.

According to Gemata's analysis, with airless spraying to apply the base coat, 35% of the chemical product is dispersed (which is to say that for each gramme deposited on the hide, 0.35 grammes are dispersed). And using a spraying system to apply an intermediate coating, colour coating and top coating, 60% of chemical product is dispersed.

The economic benefits to a tannery would appear to be quite considerable. On

top of better yield and other savings on cleaning and purchasing, for every 1 million sq.ft of finished leather produced using the two machines, a tannery could expect to save some 21,000 kg in coating products, 58 million litres of compressed air, as well as over 33,000 litres of water. In terms of energy, it would also save 5,980 kWh.  TMM

Presenting the new machine range at Gemata's open house event.



Table 3 Comparison of the water, compressed air and electric power consumption of a 3400 water curtain spray cabin with those of a Jumbostar-Topstar system

3400 WATER CURTAIN SPRAY CABIN

Water consumption:

Water consumption at every 12 article change	20–35 lt
Cabin water consumption in maintenance every 40 working hours (1700 lt)	42.50 lt/h
Water consumption per scrubber while working	22.00 lt/h
Total consumption per scrubber every 40 working hours	
For cleaning and sludge disposal (750 lt)	18.75 lt/h
TOTAL consumption	83.25 lt/h

Electric power :

Carousel gearbox	1.1 kw (installed)	absorbed 0.77 kw
Water recirculating pump	4 kw (installed)	absorbed 2.8 kw
Scrubber motor	22 kw (installed)	absorbed 15.4 kw
Scrubber pump	0.75 kw (installed)	absorbed 0.52 kw
TOTAL	7.85 kw (installed)	absorbed 19.49 kw
TOTAL electric power consumption		19.49 kWh

Compressed air consumption:

Consumption for the guns' changeover	144,000 lt/h
Air nozzle pipe to remove dust from leathers	1,500 lt/h
TOTAL compressed air consumption	145,500 lt/h

TOPSTAR:

Water consumption:

Water consumption at each article change	20–35 lt
Water consumption for the washing of the rubber roller	2 lt/h
TOTAL water consumption	2 lt/h

Electric power:

TOTAL	7.85 kw (installed)	absorbed 5.2 kw
Electric energy consumption		5.2 kWh

Compressed air consumption:

Machine	400 lt/h
Product pump	1,500 lt/h
Air nozzle pipe to remove dust from leathers	1,500 lt/h
TOTAL compressed air consumption	3,400 lt/h

JUMBOSTAR

Water consumption:

Water consumption at each article change	20–35 lt
Water consumption for the washing of the conveyor	3 lt/h
TOTAL water consumption	3 lt/h

Electric power:

TOTAL	5.4 kw (installed)	absorbed 3.5 kw
Electric energy consumption		3.5 kWh

Compressed air consumption:

Machine	400 lt/h
Product pump	1,500 lt/h
Compressed air nozzles to remove dust from leather	1,500 lt/h
TOTAL compressed air consumption	3,400 lt/h



The control panel of the new machine.

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