

Case Study

THE CHALLENGE

CONSISTENT CROISSANT COATING

PROBLEM

A large bakery firm with a spraying line for coating variable product runs of croissants and other pastry products found that coating quality was highly inconsistent. This was because the conveyor had to run at different speeds according to which product type was being sprayed.

The firm was using standard hydraulic spray nozzles. To take account of the different conveyor speeds, the flow rate from the nozzles need to be varied but, by varying the fluid pressure, droplet size was affected meaning products were being unevenly coated, affecting quality and uniformity and leading to ruined product and wastage of costly coating materials.

The only solution was to change nozzles between production runs which was time consuming, costly and inefficient.

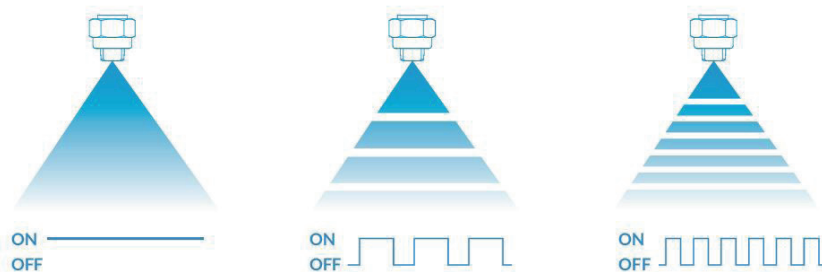


SOLUTION

SNP proposed trialling its new HydroPulse electric nozzles which would allow for different flow rates to be achieved for different conveyor speeds without changing any of the fluid properties.

Electric HydroPulse (EHP) spray nozzles, which do not require a compressed air source and are capable of cycling on/off up to 150 cycles per second, afford the option of using high-frequency cycling known as Pulse Width Modulation (PWM) to vary the liquid spray flow rate at constant supply pressure with little change in spray performance by adjusting the duty cycle.

When the spray cycles at a high enough frequency, coverage uniformity is maintained because the duration between pulses of spray is short enough to ensure there are no gaps in the coverage.



PRODUCT

The electric-actuated HydroPulse Hygienic Design (EHP) spray nozzle for food applications assures precision volumes of expensive ingredients and compounds are sprayed directly onto the processing target, with overspray waste virtually eliminated.

Used with a control system such as our FlexFlow control panel, manufacturers can ensure precision control and flexible automation. FlexFlow panels can manage up to 20 spray nozzles in up to 20 independently controlled spray zones.



Electric Hydropulse® - Hygienic Design	
Liquid inlet connection	1/8", NPT or BSPT, or 1/2" tri-clamp
Maximum liquid flow rate	3.8 LPS
Maximum rated pressure	17.2
Thermal insulation class	F (155°C/311°F)
Power	9.4W @24 VDC
Maximum cycle frequency	150 cycles/sec
Nozzle construction	Stainless steel wetted components, Food grade Viton® (FKM) seals compliant with CFR 21.1700.2600, hygienic design
Interchangeable BJ, BJH and CW nozzle tip options	

BENEFITS OF EHP

- Guarantee an even and uniform application rate that connects with conveyor line for automated speed adjustments
- Reduce consumption of expensive coatings
- Reduce overspray waste and improve product quality
- Exact target coatings secure a clean and safe environment
- Promote increased production
- Reduce maintenance and downtime
- Reliable spray dosing provides an accurate calorie count

CONCLUSION

Following the trial of the EHP nozzle system, the bakery products company installed the nozzles across all of their production lines. Coating was uniform across all product types, reducing overspray which had previously led to product being ruined and which amounted to a costly waste of expensive coating materials.

Nozzles no longer had to be switched between production runs, saving time and maintenance and cleaning time was also reduced. The overall calorie count of the finished products was also able to be accurately measured and was lower too.

The company estimated that they were making minimum savings of £880 per month which represented a significant return on investment given they had recouped the cost of the nozzles in a matter of just a few months.

Orbitor Eco



THE
SPRAY NOZZLE
PEOPLE