

INCREASE FLOW TO INCREASE PRODUCTION

Here are three strategies commonly used to boost production.

- Increase flow by increasing orifice size**
 Increasing the orifice size while maintaining pressure increases flow rate. Be sure to check that the dryer has enough evaporative capacity to handle the higher flow rates and enough residence time to handle the larger drops that will be produced
- Increase flow by increasing pressure**
 One option is to use the same nozzle, but beware that higher pressure will result in smaller drops. Another option is to use a different nozzle type – or a different orifice and core/swirlchamber/whirlchamber combination – to maintain the same drop size at a higher pressure and flow
- Increase flow by using a multi-orifice nozzle**
 The same size orifice and operating pressure will produce the same droplet/particle size. Or, use a multi-orifice nozzle that produces smaller drops when splitting the flow rate through two, three or four orifices. This results in smaller drops that evaporate more quickly and will increase the rate of powder production



Multi-orifice 3SK SprayDry® Nozzle

EXAMPLES OF INCREASING FLOW AND PRODUCTION

Nozzle Type	No. of Nozzles	Orifice Dia.	Pressure	Flow Rate	Drop Size Dv0.5	Example of How to Increase Production
SKHN-MFP + SIY71 + SKY21-MFP	1	.026" (0.66 mm)	2,500 psi (172 bar)	25 gph (95 l/hr)	44	Base nozzle for example
SKHN-MFP + SIY69 + SKY21-MFP	1	.029" (0.73 mm)	2,500 psi (172 bar)	30 gph (114 l/hr)	46	Increase flow rate by increasing orifice diameter
SKHN-MFP + SIY71 + SKY21-MFP	1	.026" (0.66 mm)	4,000 psi (275 bar)	30 gph (114 l/hr)	38	Increase flow rate by increasing pressure
Multi 2SK + SIY71 + SKY21-MFP	1 with 2 orifices	.026" (0.66 mm)	2,500 psi (172 bar)	25 gph * 2 = 50 gph (189 l/hr)	44	Use Multi-2SK to double the flow rate. Be sure to confirm that you have enough evaporative capacity
Multi 3SK+SIY77 + SKY20-MFP	1 with 3 orifices	.018" (0.45 mm)	2,500 psi (172 bar)	10 gph * 3 = 30 gph (114 l/hr) total flow	34	Use Multi 3SK to triple flow rate and produce smaller drops – increasing the rate of powder production



CASE STUDY

PROBLEM:
 A major food ingredient manufacturer needed to increase production.

SOLUTION:
 One of the five nozzles in the tower was changed to a multi-orifice 3SK SprayDry nozzle to take advantage of higher flow capacity and smaller drops. **This simple change enabled the manufacturer to increase production by 20%.**

