Mixing It Up

Denis Hunn from ystral takes us inside the world of the mixer, highlighting how technologies have changed over the years, offering considerations when choosing the right mixer – and giving us a glimpse of tomorrow’s needs.

How have pharmaceutical mixing systems changed over the years?

In the past, no matter whether producing a coating, gel or granulated product, simple propeller stirrers were used to mix solids into a liquid. There were disadvantages associated with air intake, as well as long and non-reproducible processes, and insufficient dispersion. Some problems could even lead to system shutdown in subsequent steps, such as coating or dosing. For example, if the active ingredient volatilizes during degassing or due to non-optimal degassing or due to non-optimal vacuum, which reaches up to a few millibar (absolute pressure) in its dispersing zone. This is so that the pharmaceutical industry in particular, has to ensure that it has no free-rotating shaft between the particles increase. For more difficult applications, care should be taken to ensure that solids are not scattered from above into the vessel and onto the liquid surface, which can lead to the formation of agglomerates. It is always advisable to feed the two streams (powder and liquid) from opposite sides into a dispersing system to wet and disperse the powder under vacuum (as noted above). The actual batch tank does not have to be vacuum or pressure resistant for this purpose. With a variety of sizes and application-specific dispersing tools, this system can cope with batch sizes from 5 liters up to several thousand cubic meters. Put simply, the machine transports and disperses powders directly into a liquid. How? By generating an extremely powerful vacuum, which reaches up to a few millibar (absolute pressure) in its dispersing zone.

What should companies consider when choosing the right system?

If you are looking for a simple mixing system, I recommend taking care to ensure that there is no free-rotating shaft because this can lead to the formation of a vortex and the impact of air. With other equipment, such as dewatering or coating, the closer the powder comes to the liquid surface, which can lead to the formation of agglomerates. It is always advisable to feed the two streams (powder and liquid) from opposite sides into a dispersing system to wet and disperse the powder under vacuum (as noted above). The actual batch tank does not have to be vacuum or pressure resistant for this purpose. What is your advice in terms of care and maintenance of the system? It is important to work closely with customers – and I think pharma companies always find it an interesting experience to work with machine experts. We examine processes, bring in our technical know-how and are often able to exploit potential of which our customers were not aware.

What industry trends will shape the development of future mixing solutions?

Right now, we are keeping the eyes on new applications in the market. Renewable organic raw materials is one key area. In addition, there is a lot of interest in the cannabis market. We have already carried out some initial projects in this field, but you’ll have to watch this space for further details!