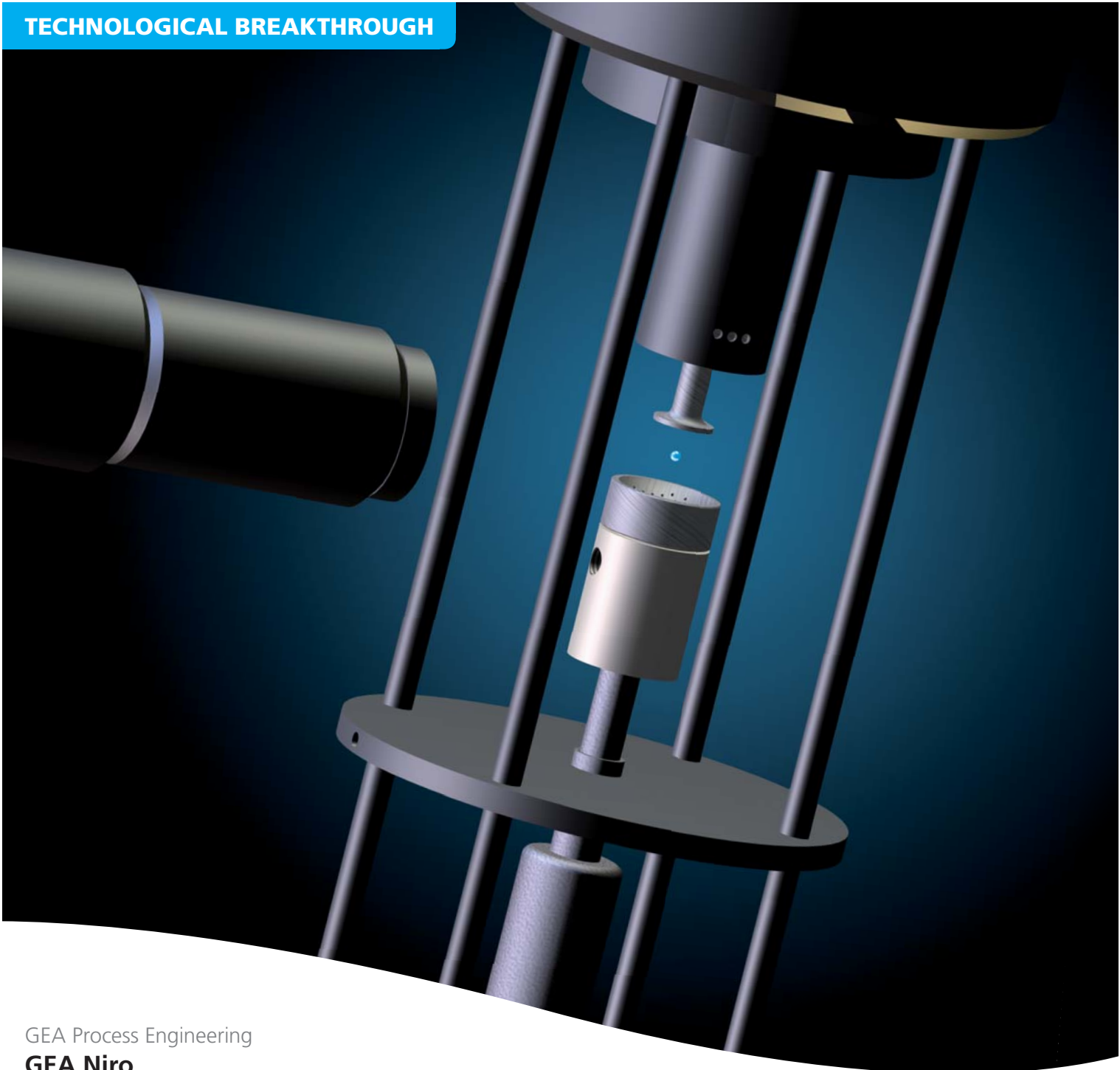


DRYNETICS™

Building a better spray dryer drop by drop

TECHNOLOGICAL BREAKTHROUGH



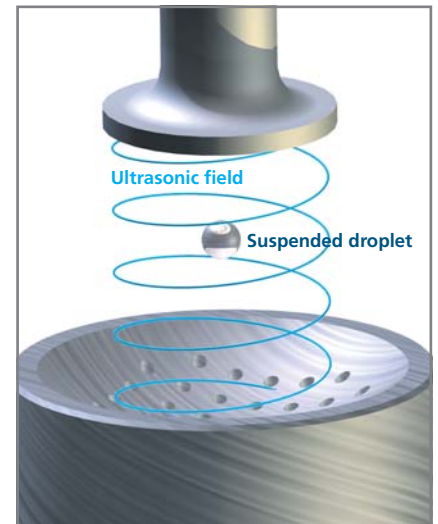
DRYNETICS™ injects real world data into computer simulations to achieve vastly more accurate results

For years computational fluid dynamics (CFD) has been used in the design and optimization of spray dryer performance. Now in a world's first, GEA Niro has vastly improved the reliability of this simulation technique with a proprietary new method called DRYNETICS™ that puts the software on a more scientific footing.

Scientific method

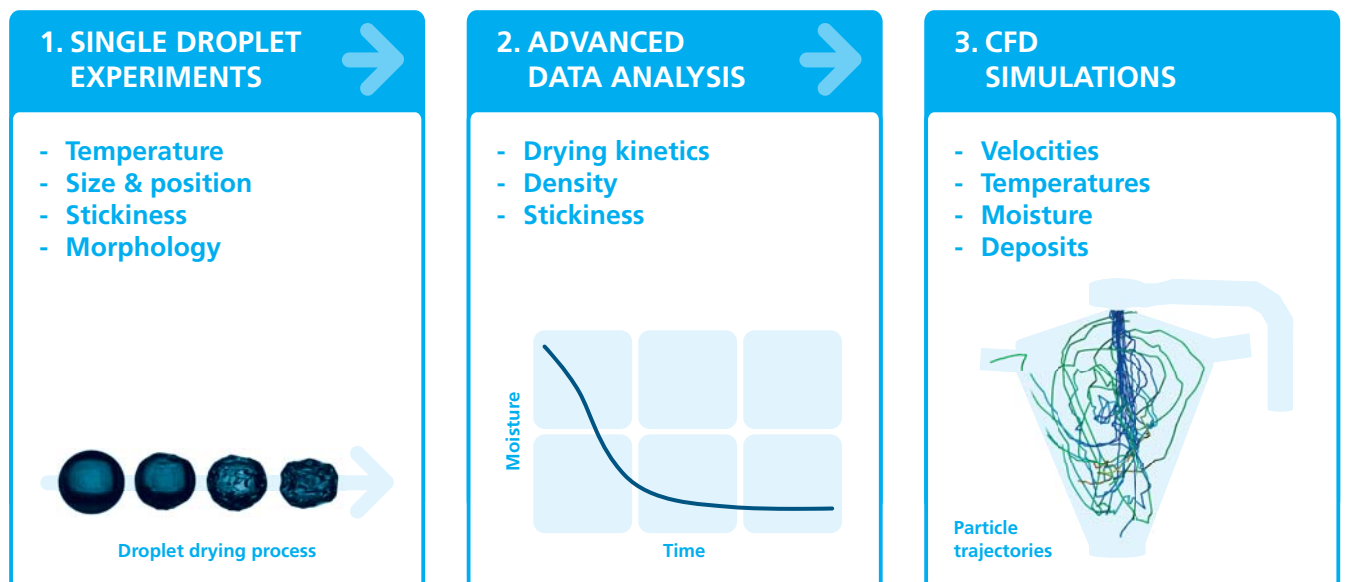
Conventional CFD simulation programs assume when it comes to drying that all feeds are essentially alike. In reality they aren't. Some take longer to dry than others. Some are also sticky and can form deposits on dryer walls, significantly impairing system performance. However, without empirical data it was difficult to predict whether a given feed would pose such problems or where deposits might form.

DRYNETICS™ provides the solution by incorporating real-world measurements into the CFD software. Experiments are conducted on individual droplets of a feed to determine its actual drying properties. The results are then transferred to the CFD software with the help of appropriate mathematical models, making it possible to simulate the drying process with unprecedented accuracy.



Ultrasonic levitation is used to suspend the droplet of feed being tested, making it ideal for observing and measuring the drying process.

The DRYNETICS™ method consists of three separate stages.

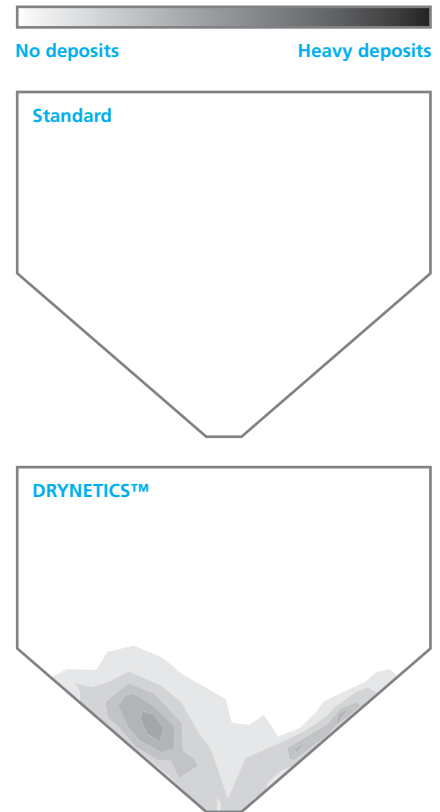


Improving the method improves the result

Using DRYNETICS™ to improve the drying process inevitably leads to better results, whether you define that as a better product, a better bottom line or, more likely, both. By providing a more realistic picture of what goes on inside the spray dryer, DRYNETICS™ opens a new door to process improvements and product innovation. Airflows can be better distributed for optimal performance. Dryer size and energy requirements can potentially be reduced. New formulations can be tested under realistic conditions. Drying properties of different feeds can be fine-tuned.

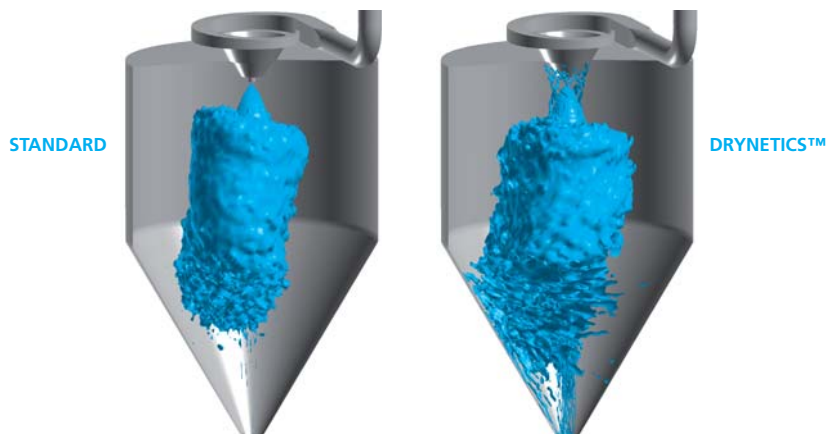
Moreover, DRYNETICS™ can be used with virtually any type of dairy, food, chemical, biological, or pharmaceutical product. It's an important step forward for designers of spray dryers as well as those who use them, brought to you by GEA Niro.

For more information please see www.niro.com or contact us at development.niro@geagroup.com

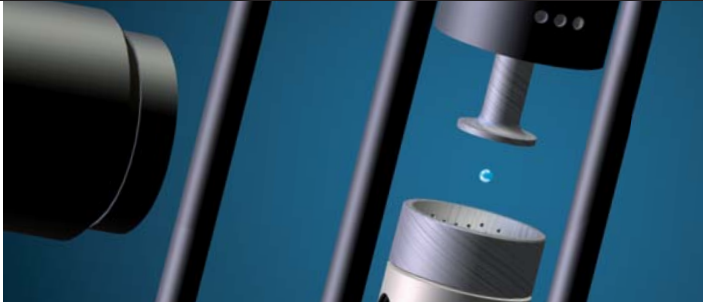


The superiority of DRYNETICS™ as a predictive tool is clearly shown in this comparison. Standard software fails to detect the accumulation of sticky deposits on the dryer's walls, whereas DRYNETICS™ pinpoints the problem, suggesting the need for a redesign or operational improvement.

MODEL COMPARISON OF PARTICLE STICKINESS



DRYNETICS™ depicts the drying process as it really is thanks to the use of experimental data. Here the volume of sticky particles indicates the accumulation of troublesome wall deposits that would otherwise be overlooked.



Experience

GEA Niro has contracted and installed more than 10,000 plants worldwide

GEA Niro is a world leader in industrial drying, with spray drying, spray cooling/congealing, flash drying, freeze drying, granulation and fluid bed processing as core technologies. Having installed more than 10,000 plants around the globe, GEA Niro is known for delivering solutions that meet customers' exact requirements. The GEA Niro companies are part of GEA Process Engineering.



GEA Process Engineering

GEA Niro

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