



Solutions for Science & Industry

Columbus NanoWorks, Inc.

Background: Columbus NanoWorks, Inc. is a developer of magnetic nano-particles for use in the detection of brain tumors, the isolation of stem cells and other medical applications. The Ohio-based company, located in the SciTech Columbus complex, is a recognized leader nanotechnology and a partner in medical research with the Cleveland Clinic.

The Challenge: Columbus NanoWorks was ready to move their product from the Research & Development stage to manufacturing. The method being used for their R&D activities, magnetic stir bars in beakers, was not suitable to scale-up because the stir bars used attracted the particles, preventing complete dispersion in solution and making it impossible to process meaningful quantities. The very nature of nano-materials present the first problem in scale-up; finding equipment suitable for mixing solutions that contain particles thousands of times smaller than a human hair. The options are limited and expensive. In addition to size constraints the reaction vessel had to be manufactured from glass, and the system needed to allow temperature control, mixing under moderate pressure, and sealing technology that would not in any way contaminate the product from the use of stuffing boxes, packing glands, or barrier fluids. Because Columbus NanoWorks is a growing company cost was not an insignificant issue, so any solution needed to be as economical as possible, and versatile enough to grow with the organization.

The Solution: The ideal system for Columbus NanoWorks would effectively contain their constituents and finished product, provide opportunity to collect process information and allow absolute repeatability for success. A chance meeting at a Columbus, Ohio business event introduced Columbus NanoWorks President Arfaan Rampersaud to the Delp Mixer concept which he immediately identified as the solution to his manufacturing challenges.

Delp & Associates, the parent company of Delp Mixer, provided the perfect solution for Columbus NanoWorks, the Delp 216AF Mixer. This product mounts directly into standard laboratory glassware, eliminating the cost of custom pieces; operates under pressures as high as 200psi, though Columbus Nanoworks required less than 10psi; and through use of a magnetic coupling and static seals eliminate products that may contaminate vessel contents. Highly versatile, the selected mixer will grow with the production needs of Columbus NanoWorks and assist in bringing their product to market faster and at a lower cost.



The Result:

"Delp is our exclusive supplier for mixers because of a combination of their knowledge of the product and their proximity, and their prices are reasonable."

- Arfaan Rampersaud, President, Columbus NanoWorks, Inc.

Case study shared with the knowledge and approval of Columbus NanoWorks.