

Case Study

Tangential Flow Filtration (TFF) & Repligen

MEETING CURRENT AND FUTURE BIO-FILTRATION NEEDS

In biochemistry and the development and production of biomolecules, one of the key techniques employed from the research stage to the production stage is tangential flow filtration.

Tangential flow filtration (TFF), also known as cross flow filtration, passes a fluid tangentially across the surface of a porous filter or membrane. Whatever is larger than the pore size of the membrane remains in the flow path and whatever is smaller migrates across the membrane. This mode of filtration ensures a higher yield and longer filter or membrane life over direct-flow filtration, which forces fluid perpendicularly through a filtration medium. TFF is used for many different filtration applications including the following:

- Purification and concentration of biopharmaceuticals and diagnostic particles
- Desalting solutions
- Point-of-use water filtration
- Cold sterilization of culture media
- Protein purification and concentration
- Virus removal and concentration
- Lysate clarification
- Bioreactor perfusion
- Whole-cell diafiltration

Whether it's at the smallest ultrafiltration scale or the larger microfiltration scale – or somewhere in between – many liquid-processing pharmaceutical companies, biotech companies, and even smaller R&D laboratories are employing TFF throughout their processes.

In the market of TFF, one of the leading manufacturers of complete systems and novel filtration membrane media is Repligen in Los Angeles, CA. Over the last 15 years, Repligen has worked with Masterflex® to source the peristaltic pump hardware that is incorporated into their systems.



CHALLENGE

The modern TFF systems currently produced by Repligen can trace their design genesis back to 2004. At that time, Repligen, already well-known for their filtration products, made the commercial decision to develop a proprietary TFF-based monitoring system that incorporated pumps. They also knew that, because of how their customers would use the systems, it was essential to make much of the entire fluid pathway disposable and easily sterilized. That meant the best pump for their system would need to be a peristaltic pump, a technology they did not manufacture themselves.

As Tony MacDonald, President of Repligen said, "We wanted to develop the most economical and the most complete system on the market." In fact, their goal was to stand out from the competition by creating complete systems that included the necessary hardware—equipment, tubing, fittings, and accessories. Having a complete system "in the box" would enable customers to begin functionally using their new equipment right after it was installed.

"However, we knew from the beginning that we didn't want to be a pump company," MacDonald said. Therefore, Repligen needed to find a pump manufacturer they could partner with to develop the customized pumps they needed.

SOLUTION

The first company Repligen approached was not willing to partner with them to create the customized pump solution they required. That's when they turned to Masterflex and found the supplier that could meet their needs.

"Masterflex had the product line to make our business successful," said MacDonald. "Since the beginning, they have been very amenable to adjusting their pump to meet our requirements. Over the years, they have made changes to the packaging of the pump, the pump's firmware, the controlling software, even the colors employed on both the head and drive. They were exactly what we were looking for in a supplier and critical to the successful development and launch of the systems that comprise much of our product line today!"

OUTCOME

With well over a decade of successful sales history, Repligen has a history of pushing the limits towards affordable automation. Looking ahead, the company sees a strong demand for even more advanced – yet still highly accessible – filtration-based technology. As more and more of the system fluid pathway trends towards disposability and with an increased interest already being expressed in displacing size exclusion chromatography with TFF technology for protein separation, the systems of tomorrow will likely look different than they do today. Even so, Repligen, along with key supplier partners like Masterflex, are already taking steps to meet those needs as the TFF market undoubtedly expands.

If you are interested in obtaining more information on the TFF systems produced by Repligen, visit them at www.repligen.com or send an email to customerservice@repligen.com.

Learn more about our Custom Engineering Solutions

If you would like to learn more about how we can partner with your company, as you develop your next system or technology, contact us at 1-800-MASTERFLEX or by email at techinfo@masterflex.com.