

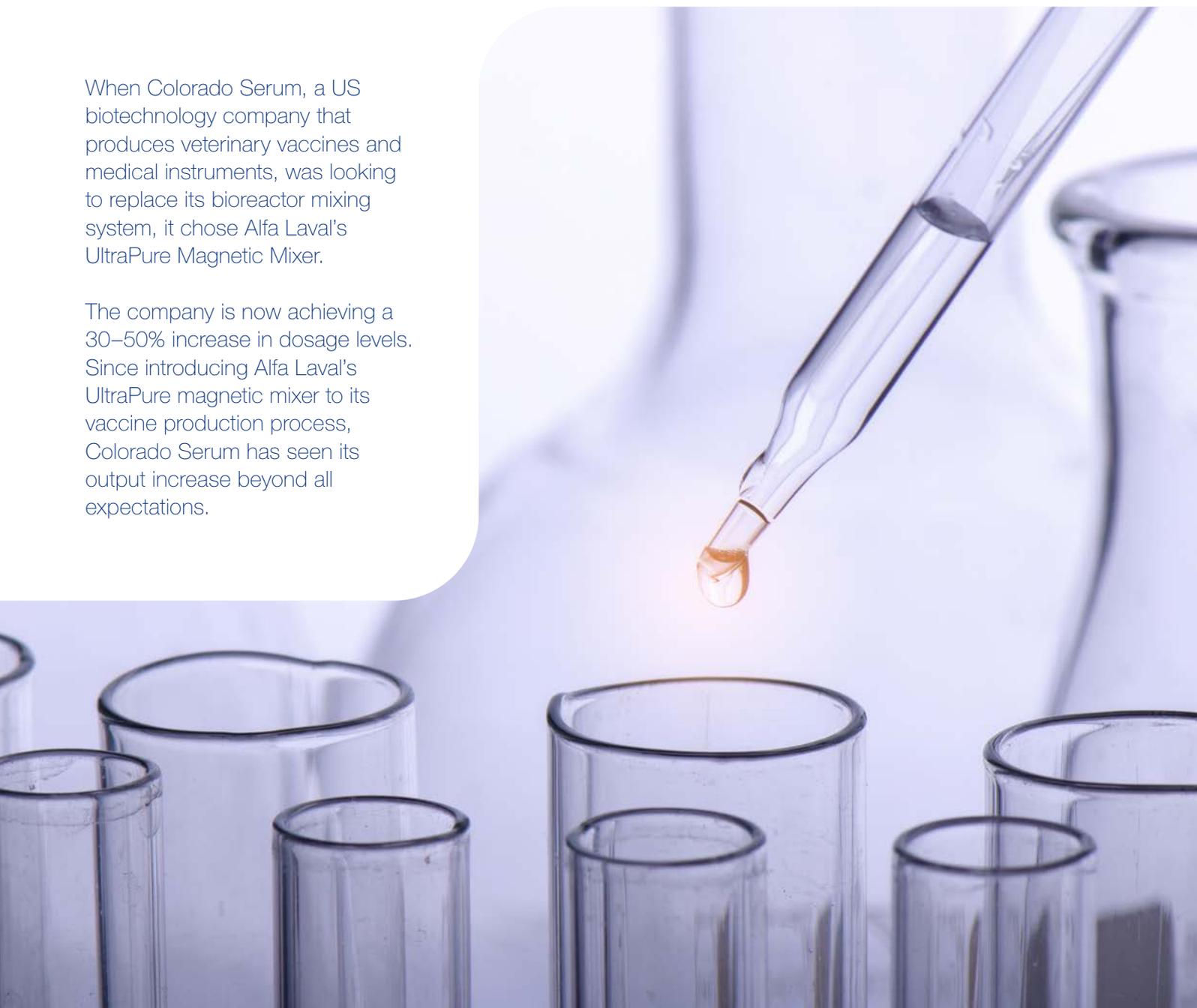


## Mixer improves output for biotechnology company

**Colorado Serum, United States**

When Colorado Serum, a US biotechnology company that produces veterinary vaccines and medical instruments, was looking to replace its bioreactor mixing system, it chose Alfa Laval's UltraPure Magnetic Mixer.

The company is now achieving a 30–50% increase in dosage levels. Since introducing Alfa Laval's UltraPure magnetic mixer to its vaccine production process, Colorado Serum has seen its output increase beyond all expectations.



“It’s amazing because we are now greatly improving our output, attributed solely to the mixer.”

Annie Ewing, microbiologist

### Increase attributed to new mixer

The mixer, which features a unique levitating impeller design, is part of a bioreactor used to produce a vaccine against leptospirosis, a bacterial disease transmitted through the urine of wildlife animals such as skunks and raccoons. The disease infects cattle and swine, causing kidney and liver failure and ultimately death.

### A perfect match

Colorado Serum is a fourth generation, family-owned company based in Denver. In 2009, the company management was looking to replace its existing bioreactor mixing system, and while researching options it came across Alfa Laval’s magnetic mixing technology and determined that it was the perfect fit.

### Mixing at different velocities

The bioreactor’s mixing process always starts at very low revolutions per minute (RPM) which allows the organisms to acclimatize to their new controlled environment. By eliminating friction, the magnetic mixers’s levitating impeller design makes it possible to mix at velocities ranging from an extremely slow 10 RPM right up to 600 RPM. Via a series of gradual aeration additions and RPM increases, the biological growth can be accelerated.

### Better cell count gives more doses and vaccines

Since installing UltraPure, Colorado Serum has been mixing with greater levels of return.

“My organisms are highly aerobic and require the correct amount of oxygen at the right time to grow,” says Ewing. “We’ve found that the mixer and proper introduction of air over increments of time provide the perfect combination to increase growth to levels never seen before at Colorado Serum. Specifically, the Alfa Laval mixer has allowed us to generate a greater cell count, which equates to more doses and vaccines that we can sell. We consistently see a 30 to 50 percent increase in cell count.”



### Better scale-up and no cell shearing

Colorado Serum has reported other benefits through using Alfa Laval’s UltraPure Magnetic Mixer. Its levitating design provides better scale-up capabilities by allowing cultures to freely flow and prosper, while the flow-optimized impeller, and in particular its wing shape, eliminates cell shearing while allowing cultures to move and reproduce faster.

### Full cleanability

As there are no entrapment areas or crevices, the mixer can be completely drained of product and cleaning solutions, while the open design ensures full coverage by the cleaning solution and aids the removal of product residues.

### Further improvement

The company’s next improvement will be to install a CIP bioreactor process. “We’ve achieved 50 percent yield improvements and know that by working with our process this can be improved further,” says Ewing. “Maybe 75 percent is next.”



Alfa Laval magnetic mixers maximize product yield in biotech, pharmaceutical and other aseptic applications with high hygienic demands. The unique levitating impeller design enables effective mixing right down to the last drop.

### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)

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