FEDI® 10Rx Empowers a Global Pharmaceutical Leader for High Precision Capsule Manufacturing

QUA®
An Aquatech Company

Client: Pharmaceutical Company in Brazil
Ultrafiltration Capacity: 1 m^3/hr Ultrapure Water

Ultrapure water (UPW) is a critical component in capsule production, whose purity defines the final product quality. It is used in capsule manufacturing for gelatin/HPMC (Hydroxypropyl Methylcellulose) preparation, capsule washing, equipment cleaning (CIP), final rinsing, and controlled humidification. Even minor impurities could impact product quality and compliance. As the client relied on well water as the primary source, they sought a robust and consistent ultrapure water (UPW) solution to ensure reliable, consistent, and compliant production.

Challenges:

A leading pharmaceutical company needed to treat well water for capsule production, which had high conductivity, organic load, and microbial presence, each posing a direct risk to process stability and product quality. The variability of well water further complicated operations, as fluctuations in ionic and organic content made it difficult to achieve consistent downstream performance.

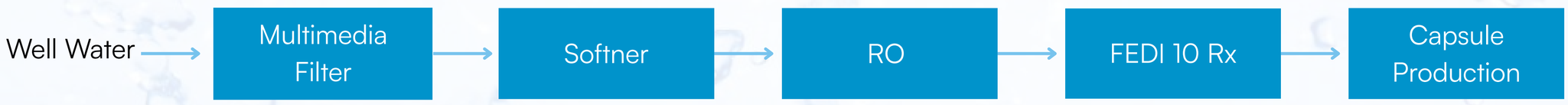
In addition, it required a solution which can control microbes without the use of chemicals, while reliably delivering 1 m^3/hr of UPW without compromising on quality, compliance, or operational consistency. The client sought a solution that could easily integrate with the existing conventional pre-treatment system to ensure reliable capsule manufacturing.

QUA's Solution:

To address these challenges, the client chose FEDI® 10Rx, an advanced electrodeionization (EDI), engineered in-house especially for pharmaceutical applications. It is FDA compliant and CE certified UPW solution, which is designed to continuously remove dissolved salts, helping maintain stable low conductivity even when well water quality fluctuates.

Its chemical-free operation minimizes the risk of organic contamination, supporting TOC (total organic carbon) control. The system is compatible with hot water sanitization at 80-85°C, enabling effective microbial management. It ensures high recovery in low power consumption while achieving ultra-low conductivity.

Process Diagram:



Results:

FEDI® 10Rx, which is known for its reliable performance, consistently achieved ultra-low conductivity (0.13 µS/cm), meeting the desired expectations. TOC and microbial levels remained stable and under control to ensure compliance at every stage. With reliable 1 m^3/hr output and seamless integration with existing pre-treatment, it ensured a compliant solution for capsule manufacturing.

The plant experienced stability in its processes, while transforming water from a challenge into a dependable strength. Proving FEDI® 10Rx capability as a reliable UPW solution provider for high precision pharmaceutical manufacturing.