

# A Smarter, Stronger Blood Fractionation Suite

How Kedrion Reimagined Their Blood Fractionation Suite to Improve Speed, Quality, and Safety



732-922-6611

info@inflexionpoint.ai

www.inflexionpoint.ai

## BLOOD PLASMA THERAPY

### Greater Control. Higher Productivity.

We help Kedrion deliver blood-plasma products consistently, using proven digital technologies and distributed architecture.

**Kedrion Biopharma** is an international company that collects and fractionates blood plasma to produce and distribute plasma-derived therapeutic products for use in treating serious diseases, disorders and conditions such as hemophilia and immune system deficiencies.

#### Total Rebuild Required

Kedrion needed to completely rebuild their fractionation suite from the ground up. This provided the opportunity to also redesign the control system and network to meet the need for a flexible, modern and robust control system. A new network infrastructure was also required.

#### A Smart Solution

To help ensure all these project goals were met successfully, they reached out to Inflexion Point, systems integrators with 40 years of experience serving the world's leading life-sciences companies.

After carefully reviewing the requirements and existing applications, we de-

termined it was necessary to completely redevelop their entire PLC and SCADA program and hardware from scratch. Additionally, we determined that the network infrastructure required a major overhaul.

#### A Distributed System

We designed a distributed system that reduced the lengths of electrical and pneumatic runs. The architecture included (8) remote I/O panels and (11) Ethernet-enabled pneumatic panels. (36) VFDs were to be controlled via a combination of hardwired I/O and ethernet.

The network infrastructure (one SCADA network and (2) I/O networks) to support this distributed architecture was designed in close coordination with Kedrion's IT resources. We also designed a new redundant network switch rack for all vendor PLC network connections to the main fractionation PLC. The result was a robust new network infrastructure, fully supported by Kedrion's IT team.

#### Challenges

- Kedrion needed to rebuild its blood fractionation suite
- The company wanted to upgrade, not just replicate the existing system

#### Solution

- New PLC and SCADA applications developed in with modular approach
- New network infrastructure
- Built-in redundancy with automatic failover
- Distributed I/O design to minimize trade labor costs

#### Results

- Greater resiliency through redundancy and distributed architecture
- Increased uptime and automatic failover
- Ability to schedule downtime in one production suite without affecting other
- Modular approach ensures smooth future upgrades
- Centralized access to monitor and troubleshoot both process suite systems and supporting subsystems
- Removed security risk to the IT room

Since this was a from the ground up build, this gave us an opportunity to team up with the IT team to provide a solution for several issues:

- 1) The engineering team had no central location from where to monitor and troubleshoot the systems for both production suites.
- 2) The engineering team and contractors would have to access the IT room in order to monitor status for ongoing batches and/or service/maintain the system from the server rack. This posed a security risk since other systems were located in that same room.
- 3) Various subsystems were interconnected via multiple unmanaged switches which provided no tools or insight to network performance or possible network related issues.

The new design would need to solve all of these problems and more. As a result of the need of a new network design, this requirement quickly expanded to Kedrion's other process suite known as RhoGAM. So the scope now involved two SCADA networks and the (2) DLR I/O Networks.



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Chris Monchinski  
CTO, InflexionPoint

A DLR design was used to provide network connectivity redundancy for all Remote I/O panels and to provide tools that monitor network status that can be used to alert engineering to possible network related issues before they become larger issues that could cause unexpected downtime to the process.



**New PLCs Expedite Development Process**

Utilizing our proven object libraries to expedite the development process, we built new PLC and HMI applications. We also implemented a new interface and Phase Manager batch sequences that were derived from templates.

**Redundancy Allows for Greater Uptime**

In the past, when Kedrion had to make batch system updates for either fractionation or medicine production the other process had to be put into manual control.

We provided a solution to separate the two processes so that if updates were to be made on one system, the other production suite would not be affected in any way.

This new architecture would now have redundancies built in for automatic failover saving the company in downtime costs moving forward. Most importantly, Kedrion is now able to schedule downtime maintenance, and upgrades on one production suite without affecting the other.

**A Modular Approach**

Importantly, we followed a modular approach based on S88 to develop a flexible system that meets Kedrion's current and potential future needs. This robust system with built-in redundancies will keep the plant running for years to come.