

# Product Development Case Studies



# Next Generation Textile Cutter Control System

Complete new control software developed and delivered in 12 months



## The Situation

A manufacturer of industrial cutting machines was looking to develop a next-generation textile cutter control system with scalable architecture to enable faster delivery of new product enhancements. Development efforts were constrained by complications arising from multiple acquisitions, eroding product margins, largely undocumented off-shore development of code, and intense competitive market pressure.



## Challenges

- Multiple acquisitions resulted in the need to support several architectures – driving up R&D costs
- Aging software and outdated technology created reliability issues significantly delaying releases of new features
- Time to market was critical, had to respond quickly to lower-priced, more sophisticated control systems already in the market.



## Solution

- Develop an architecture migration strategy that supports current business, opens new market capabilities, and reduces cost of development
- Designed and developed new control system including electronics and software, sensors, UI, real-time digital network, imaging, printing, and interfaces to external systems
- Hybrid team of highly experienced embedded software engineers and off-shore software team to move quickly and deliver high value
- Managed product through integration, testing, and deployment of new control system



## Proven Results

- Complete new control software developed and delivered in 12 months
- One scalable, flexible platform architecture rolled out across multiple product lines
- Faster time to market for new features – responding quicker to market demands
- Client's product leadership position re-established
- Advanced automation features, enabled by new architecture, support industry 4.0 factories of the future making entry into new markets possible

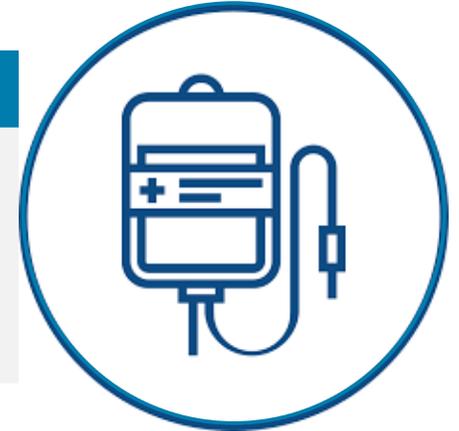
# Mobile Blood Apheresis Machine

Designing and developing the embedded software for a moveable Class III Medical Device



## The Situation

A global pioneer in analytical laboratory instruments wanted to create a mobile blood apheresis device with real-time, next generation embedded software that must be compatible with their legacy system and support data collection and transfer.



## Challenges

- The software architecture designed would have to include over a dozen different computer processors which had to communicate.
- The device was to be mobile and therefore able to withstand transport.
- The device is a Class III medical device and would be subject to all regulatory statutes.
- Software logic had to be designed based on the “state” of the device at any given time period.



## Solution

- Define operating system to be used to bridge to the next generation system
- Work closely with hardware and material engineers on device design
- Create a new system interface
- Focus on interoperability between pump, motor, safety and other systems.



## Proven Results

- Operating system chosen and configured for future growth and additions
- Device sent to market in +20 months

# Universal Liquid Dispensing System

New design provided new market possibilities and fueled business growth



## The Situation

A beverage dispensing facility needed to rapidly modify their existing production process without any downtime. They wanted to develop a universal liquid dispensing system to accurately dispense a range of fluid viscosities and inclusions at high speeds in a corrosive environment.



## Challenges

- Existing dispensing system was optimized for speed, not liquid variability
- Dispensing system required a complete stop and rework as fluid viscosity changed, impacting cost and efficiency
- Cost-effective solution must address consistent pour and liquid variability
- Engineering team was looking for fresh perspective



## Solution

- Systems thinking approach identified potential solutions leading to the redesign of the existing dispensing valve
- Designed and built prototype for new dispensing valve
- New valve design optimized for reliability, consistency, and efficiency



## Proven Results

- Innovative universal dispensing valve capable of efficiently managing a range of fluid characteristics
- Solution was delivered in less than six months – patents on design are pending
- Faster response to market trends are now possible
- New design provided new market possibilities – fueling business growth