Pharmalucence

Navigating through a perfect financial storm with entrepreneurial spirit

For many, the summer of 2007 was the dawn of difficult times; financial markets were on the verge of collapse and the world would soon be drawn into a long recession. For Pharmalucence, however, the financial crisis in many ways represented a perfect storm; an opportunity for the company to capitalize on its management's entrepreneurial spirit and transform the way it does business.

Pharmalucence was created in 2007 through a management buyout of CIS-US, Inc. by three long-term employees who shared the vision to become both an advanced contract manufacturing organization (CMO) and a leading manufacturer of radiopharmaceuticals.

The assets acquired from the buyout included a legacy manufacturing operation at one of four separate leased facilities. This presented a challenge on two fronts. First, the facilities were in critical need of modernization and second, the four-facility scenario created numerous operational inefficiencies. For example, warehousing, primary manufacturing, packaging, quality and administration were spread between various buildings.

Pharmalucence Inc., a Sun Pharma Company

Honorable mention

Project:
Aseptic Fill-Finish Facility

Location:
Billerica, MA, USA

Project Mission:
To replace the existing manufacturing facility and consolidate all operations into a single-owned building to secure the current product line and allow for future business growth. Design of the new manufacturing facility to provide a minimum ten-year worldwide compliant design.

Site information:
70,000 sq. ft (6,500 m^2)

Significant change was needed to ensure the long term availability of the company's product supply and the viability of their business. Given limited financial resources their challenge was to effectively plan, prioritize and implement the upgrades needed for full regulatory compliance and product supply integrity all within a competitive business model.

"We saw the need for a new infrastructure, the need to secure the jobs of our colleagues and find a way to make it all happen," said Ed Connolly, Vice President of Operations at Pharmalucence, when asked about the entrepreneurial approach taken by the company. "Throughout this project, our mantra was that patient safety is number one; and by keeping that as the focus, everything else would work out."

Pharmalucence partnered with IPS (Integrated Project Services, Inc.), a full service engineering company, to develop a strategic business model and execution plan. Weighing options, they took the bold financial and technical step to consolidate their four existing operations into a single modern facility. They identified an existing facility large enough for their objectives and near enough to retain existing staff.

When the time had come to acquire the facility, the company benefitted from what could be seen a perfect storm of circumstances arising from the ongoing financial crisis. "We had some fortunate timing in that we were able to secure a low interest bond from the state and because the economy was doing so poorly, the pricing on some of the equipment was very favorable," said Connolly. "Also, the pricing of the building we acquired was significantly less than when we initially looked at it."

Nonetheless, financial capital was limited and new revenue generation would have to come from the investments. Expansion into the CMO business was seen as a solid basis for projecting the revenue by leveraging a state-of-the-art operation.

"We had the luxury of having a profitable core product line, which provided us cash flow during the build-out," said Connolly. "We saw the growth of contract manufacturing as very compatible with maintaining our existing products and adding revenue through the CMO business."

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Project Overview

To build and integrate their facility with limited resources, Pharmalucence developed a strategy that leveraged a turnkey Guaranteed Maximum Price ($GMP) project delivery systems with cutting edge advanced aseptic process technology, facility design based on new Quality by Design (QbD) principles, validation using risk assessment principles, and innovative financing leveraging the government's stimulus program. This project's success relied on all five of these approaches came together in an integrated approach to create a fully compliant state-of-the-art facility.

The five part facility integration program was initiated in the second quarter of 2010 and successfully implemented in the fourth quarter of 2014.

The company identified an existing vacant 70,000 square foot building shell in nearby Billerica, Massachusetts that met the required financial criteria and geographic proximity to the existing facility for employee retention. It was large enough for the complete integration of the operations from the four existing buildings into this one building. Upon build-out, it would also contain space for future growth considerations. The project resulted in a state-of-the-art facility with improved operating efficiency, reduced operational risks, reduced operating costs, increased manufacturing capacity, greatly reduced regulatory compliance risk, flexibility for growth and a sustainable business model.

The strategic plan was successfully completed by:

Project Delivery
Contracting with IPS (IPS-Integrated Project Services, Inc.) for a full EPCMV (Engineering, Procurement, Construction Management and Validation) contract based on Guaranteed Maximum Price ($GMP) allowed Pharmalucence to meet their initial cost limitations by implementing a target cost approach during the design phase while controlling project spending on the extremely tight capital budget during the execution of the project.

Process Technology
Pharmalucence implemented a fully integrated aseptic filling line for both liquid and freeze dried vials based on isolation technology. A detailed concept phase analysis of isolator verses RABS technology showed that in this case, project level costs were $5 milion less for isolator technology; the RABS option actually exceeded the project budget. The projected operational savings provided by isolation technology also allowed the project to meet the financial objectives for a legacy product manufacturer.

QbD Based Facility Design
The facility design integrated a unique and cutting-edge design process that is based on newly defined ICH QbD principles starting with the end in mind, which proved to minimize any design changes throughout the project implementation. This process begins integrating the business strategies with the project operating and engineering objectives, followed by detailed definition of all operating philosophies and procedures prior to commencing with any engineering design.

Risk Based CQV
A risk based CQV (Continuous Quality Validation) approach was fully implemented on this project resulting in a lean process along with the reduced validation costs required by the project budget.

Innovative Business Plan
The Pharmalucence management team successfully obtained a Stimulus Program backed loan, local tax incentives and a favorable real estate market associated with the economic market conditions that existed in 2010 to generate an innovative financial package. The management team then integrated the cutting-edge lean QbD design and validation processes with the GMP project delivery system for an integrated design to cost control program.

"For me, this is the best project I've ever been involved with," said designer/architect Sterling Kline of IPS. "They used recently-proven technology on the cutting edge, so for the next 20 years, they know that they'll be sound. I have other clients who are now looking at Pharmalucence as a role model."

The project has indeed been a resounding success, in pure business terms and in workforce expansion. "During such trying financial times, when everyone else was laying people off, we grew from 70 employees to 100," concluded Connolly.

Initial marketing of CMO services was enthusiastically received by the pharmaceutical industry. So much so that during this promotional period, the business and facility came to the attention of Sun Pharmaceutical, who moved to purchase the company. The transaction closed on 15 July 2014.

Going forward, this project can serve as an industry business model for the replacement of legacy facilities with legacy products that are at risk of stock outages or at risk of losing market opportunities.

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FOYA Judges Panel Conclusion

"Pharmalucence is honored for accepting risk and succeeding in building a new facility that effectively addressed the market shortage for low margin legacy and generic radio-pharmaceutical products. Through good planning and prioritization they met the challenge of balancing investment, appropriate compliance, efficient operations and business viability."

In their own words

The following is an excerpt from Pharmalucence's submission, stating the top reasons why their project should win the ISPE 2015 Facility of the Year Award:

The Pharmalucence Business and Facility Integration Project provides a business case to solve the legacy facility, legacy product, drug shortage problem: This project will have a major impact on the pharmaceutical industry by providing an economically viable approach to delivering cost sensitive drugs by manufacturing in a state-of-the-art facility utilizing cutting edge processes while meeting internationally harmonized regulatory compliance expectations. This project team was able to define and implement this low cost, compliant and reliable supply model solution for drug shortage prevention while the rest of the industry was just defining the root cause and prevention program.

The first project to use an innovative integrated facility ICH QRM design approach to QbD: This project utilized risk based analysis for all key design decisions from the point of inception. Facility integration based design decisions for technology and facility layout were all evaluated and documented against business, operational, technological and financial risk throughout the entire design process eliminating design changes and forming the basis for an integrated CQV process. This project design process is likely the first practical model of the QbD design process alluded to in the ICH Q8, 9, and 10 documents.

Synergistically merged facility and process technologies to meet the regulatory requirements for integration, separation and automation: This project has utilized a fully integrated filling line that incorporates isolation technology, single-use product contact parts, automated lyophilizer loading and unloading, and 100% check-weighing. The design integrates the facility with the equipment with a modular panel system that allowed for accelerated installation, walkable ceiling to access the integrated isolator and the flexibility for the addition of a second future lyophilizer without disruption to the new lines' production schedule.

Developed and implemented a new superior conceptual planning process based on predefined operating philosophies and processes: This project utilized a cutting edge design process that is based on an ICH Q9 risk based approach. The process defines and documents, in order, the business mission; project mission; business, operational and engineering objectives; all operational philosophies; products and product parameters; the manufacturing processes and then the traditional engineering design process begins. This process ensures you begin with the end in mind and results in fewer design changes and a significantly shorter design process.

Utilized a fully integrated, $GMP based turnkey project delivery approach that prioritized schedule, outsourced capital risk and secured regulatory compliance: An integrated design-build-validate package was awarded to IPS. The lean, integrated approach allowed for an accelerated schedule that was required to meet rapidly ending leases. The $GMP contract limited Pharmalucence's budget risk, and the design firm's portfolio of regulatory approved barrier technology driven designs ensured minimal compliance risk.

Key project participants	
Manufacturer / Owner	Pharmalucence Inc., a Sun Pharma Company Edward Connolly
Designer/Architect	IPS-Integrated Project Services, Inc. Sterling Kline
Engineer	IPS-Integrated Project Services, Inc. Andy Haines
Construction Manager / Commissioning and Validation	IPS-Integrated Project Services, Inc. John Costalas