

Fiscally Fit Facilities:

A new look at what it means to be lean

A Celsis Rapid Detection White Paper

“Efficiency is doing better what is already being done.”

—Peter F. Drucker

Optimizing the fitness of a manufacturing facility requires a multi-faceted approach, using three levers: lowering operating expenses, increasing throughput and reducing inventory.

Most companies today have already taken a number of steps to manage expenses and inventory levels without negatively impacting customer service. Companies have hired consultants to reorganize their production areas in order to speed up the flow of goods by a few minutes, or made significant investments in software to optimize production, resource and inventory allocations. Yet for many manufacturers, it is still possible to literally cut days or more out of the production cycle by implementing a high-throughput, rapid microbial screening system for faster product release.

| Smart science for smart business

The Opportunity

Surprisingly, many of today's modern, automated manufacturing facilities still test for microbiological contamination using a method that dates back to the late 1800s. This "traditional method" requires a lab technician to collect and prepare samples in a growth medium, then wait until a set number of days have passed without any visible signs of microbial growth before releasing that lot of product into distribution. The wait time averages 5 days for non-sterile and a minimum of 14 days for sterile products. While samples are being held for visual inspection, raw materials, in-process batch or finished goods are typically quarantined, adding days to manufacturing lead times and tying up critical working capital that could be better invested elsewhere. Tying up this much extra working capital to support bloated inventories and extended lead times leaves the facility lethargic and far from fiscally fit.

Of course, screening your products for the absence of microbial contamination is an important step in ensuring product quality. What's out of proportion is the time it takes to get results with traditional methods, given the readily available alternative. Today's rapid screening systems can provide accurate results in as few as 24 hours—validated and accepted by FDA. That trims four days from the average production cycle.

Sterility testing, with a typical hold time of 14–17 days, is usually validated by rapid methods within 7 days, cutting a week or more from production. The financial savings can be tremendous. For example, one major pharmaceutical company was waiting 14 days for results from an in-process sterility test. Last year, they validated and switched to a microbial screening system that enables them to release batches within two days, saving 12 days from their production cycle time and reducing this in-process wait time by 85 percent.

Why Don't More People Know About This?

When looking at adopting technology to streamline the supply chain, there's a tendency to overlook the activities of the quality control group. A review of opportunities for improvement tends to end where Production leaves off and pick up again in Distribution, leaving the typically poorly understood Quality function untouched and underfunded.

On the other side of the coin, there's a tendency for people to only look within their individual departments and to overlook the financial savings for the organization as a whole. One of the most common reasons cited by Quality for maintaining traditional methods is the higher consumables cost associated with rapid screening technology. While it is true that on a per-test basis rapid methods are more expensive than standard agar methods, a financial analysis that takes into account reduced inventories and working capital requirements, plus improved operational efficiencies and responsiveness, finds that rapid systems cost significantly less overall than traditional methods.

Quantifying the Value

Fortunately for the makers of rapid screening systems and their prospective customers, it is possible to accurately quantify the financial value of implementing a system. For example, a high-throughput rapid microbial screening system can be purchased and installed for less than \$100,000 in capital, achieve payback in six to nine months, and realize an average five-year net present value (NPV) in excess of \$500,000 for non-sterile testing and well upwards of \$1 million for sterility testing at a single plant.

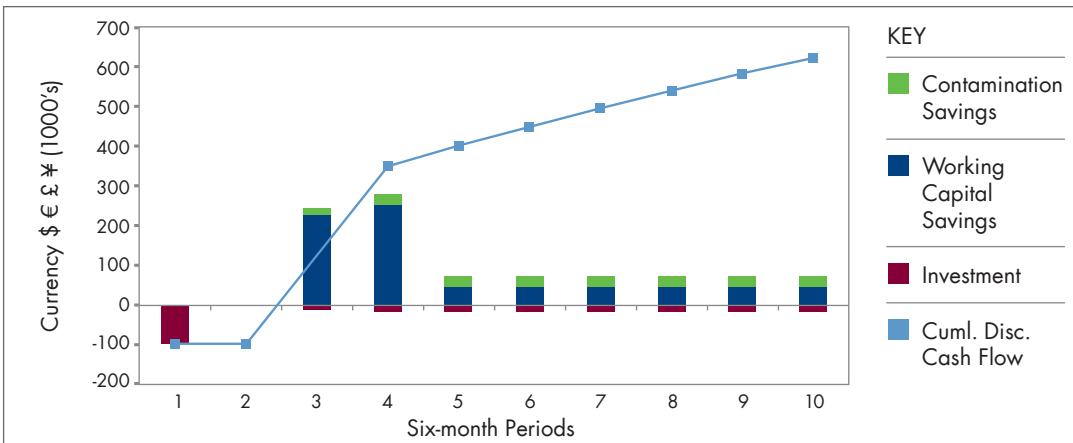
These numbers are based on averages generated using a financial model developed by a global consumer products company in conjunction with Arthur D. Little (ADL), a global management consultancy, and Celsis, Inc. The model, which was designed to quantify the value of implementing rapid screening, estimates the payback period and five-year NPV using a company's specific manufacturing and testing data—such as cost of capital and average daily output of finished goods. Proven accurate over years of use, the analysis is routinely used to support capital equipment purchase requests. Contact Celsis Rapid Detection to run the numbers for your facility.

“[Cutting lead time in manufacturing] can bring your products to market more quickly and secure your business prospects by helping you compete in a rapidly changing manufacturing arena. It will increase profitability by reducing non-value-added time, cutting inventory and increasing return on investment.”

Center for Quick Response Manufacturing

University of Wisconsin,
Madison

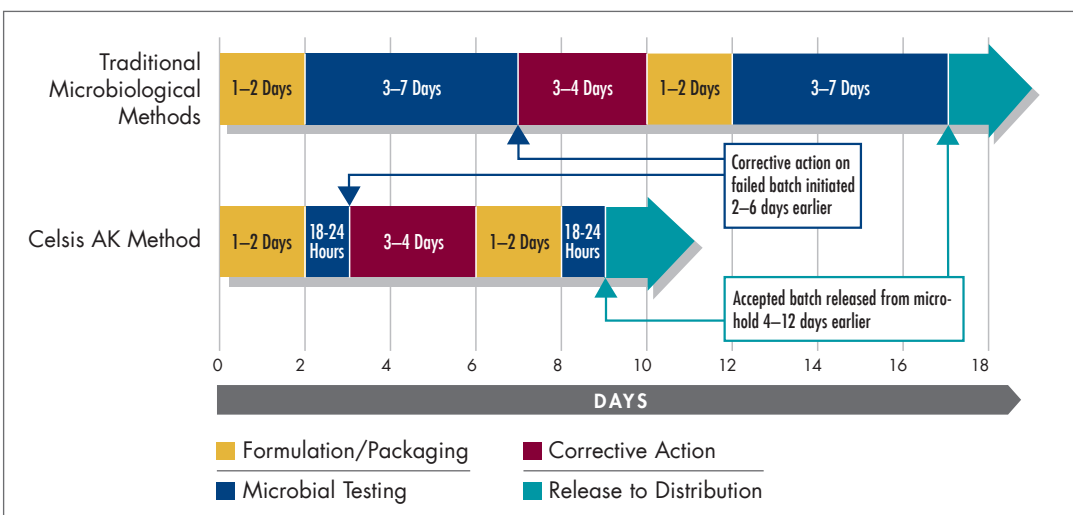
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Fitness Benefits

A physical fitness program improves one's overall health while quantifiably reducing risk factors such as weight and cholesterol levels. Likewise, implementing rapid screening goes a long way toward boosting one's overall facility fitness score, with a host of quantifiable benefits:

- **Reduces working capital requirements** – Rapid screening can help reduce working capital requirements by decreasing your investment in product held in quarantined inventory at any given time. Since it takes fewer days to produce the same amount of product, the shortened cycle time also reduces safety stock requirements and its associated working capital investment.
- **Improves operational efficiencies** – Shorter cycle times result in a leaner, more responsive manufacturing operation which improves a company's financial metrics – including return on invested capital and inventory turns.
- **Improves recovery from contamination events** – Rapid detection means earlier detection of contamination when it does occur. Earlier detection helps to minimize the amount of product affected, accelerate corrective action, and get the facility back on track quickly. This minimizes the risk of customer service interruptions or, worse yet, the risk of recalling product from the market.



- **Saves warehouse space** – Do facility space requirements factor into your five-year planning horizon? How much physical space is required in your manufacturing and distribution facilities for in-process inventories and safety stock? Reduced inventories throughout your supply chain may reduce the need for outsourced warehousing, or defer the costs associated with facility expansion.

- **Shortens the cash cycle** – With rapid screening you release finished goods to market faster, leading to an accelerated revenue cycle.

No Time Like the Present

Even if you're managing a fairly efficient operation, most companies today have room for improvement. The realizable cost savings and reduction in lead times and working capital requirements will enable your company to pursue more productive endeavors, like funding new projects, developing new products or simply conserving cash. Take a close look at your current product release method to see if there is any time in micro-hold that can be reduced. That old method from the 1800s may be comfortable, but it doesn't do a thing for your figure(s).

Five Ways to Improve Fiscal Fitness with Rapid Screening

Business Opportunities	Savings	Typical Benefit
Reduce working capital requirements due to shortened cycle times	<ul style="list-style-type: none"> • Decrease investment in product manufacturing; fewer days to produce the same amount of product • Reduce investment in inventory held in quarantine • Reduce investment in safety stock 	<ul style="list-style-type: none"> • Freed up cash for redeployment • Improved inventory turns
Improve return on invested capital	<ul style="list-style-type: none"> • Reduce capital committed to 'low return' investments like quarantined inventory • Redeploy capital to high return projects 	<ul style="list-style-type: none"> • Improved return on working capital
Save warehouse space	<ul style="list-style-type: none"> • Reduce number of days products are held in storage • Reduce costs for storing safety stock 	<ul style="list-style-type: none"> • Inventory adjustment • Overhead reduction
Streamline the supply chain	<ul style="list-style-type: none"> • Release finished goods faster • Respond to customer demand and opportunities • Accelerate revenue cycle 	<ul style="list-style-type: none"> • Increased inventory turns • Shortened product time-to-revenue
Improve recovery from contamination events	<ul style="list-style-type: none"> • Shorten recovery time by finding and responding to problems sooner • Reduce amount of scrapped product • Replace lost product with clean product faster • Minimize potential brand impact 	<ul style="list-style-type: none"> • Improved customer service levels • Improved ability to identify problems and react accordingly