



**Total Process Reliability...**



# Providing A Cure For Ailing Equipment

***This life-enhancing  
biotherapeutics  
company has found  
the prescription  
for much healthier  
equipment systems.  
Could this same  
treatment work for  
your operations?***

**H**ow do you transform an equipment failure rate of 21 days on average to 415 days and counting? One North Carolina company has found the answer.

The vision of Talecris Biotherapeutics (Talecris), a global biotherapeutic and biotechnology company based in Research Triangle Park, NC, is "to be the recognized global leader in developing and providing vital protein therapeutics." Achieving this vision requires Talecris to make a firm commitment to its employees—*as well as to its equipment.*

Success in the biotherapeutics industry involves more than smart science. It takes talented personnel, leadership and dedication to ensure that equipment and technology are efficiently and effectively utilized to produce life-sustaining treatments. So, in early 2007, Talecris launched a Total Process Reliability (TPR) initiative—*opting to characterize it, in an internal play on words, as "ToPR."* The purpose was to help bolster uptime, reduce maintenance costs and create a sense of equipment ownership among employees.

Preston Ingalls, TBR Strategies LLC  
with Kevin Pait, P.E., Talecris Biotherapeutics

Total Process Reliability is a discipline based on accountability and shared asset management (see Sidebar on page 17). Using team charters, equipment guides, job aids and work plans, ToPR helps to make complicated tasks manageable. The more streamlined and in-sync a company's equipment operators, mechanics and managers are, the more reliable the equipment will be.

The Talecris "ToPR" initiative—pronounced "Topper" by employees—is a comprehensive training program with an emphasis on equipment stewardship and a systematic approach to increasing employee engagement. The company sees ToPR as an ideal solution to equipment problems that have the potential to plague productivity.

### Changing and challenging

Ensuring the operational integrity of its Westfalia centrifuges was the main goal behind Talecris' implementation of ToPR. This equipment separates proteins into fractions; some of the proteins are discarded while others are purified for the production of the company's life-enhancing therapies. It's a process that is central to the Talecris operations in Clayton, NC. In other words, the performance of the Westfalias and the expertise of those who manage and operate them are essential to fulfilling the company's vision.

Richie Hogg is a Talecris veteran with nearly 17 years of production experience in fractionation, operations, training and performance development. When the company decided to implement ToPR as an equipment improvement initiative, it turned to Hogg. Who better to facilitate a site improvement program than an individual who understands so many facets of the production process?

Hogg sees his position today as more theoretical than hands-on. "As ToPR coordinator, my main responsibility is to promote transformation through collaboration and partnership within the maintenance, operations and engineering departments. I am a change agent."

Talecris is learning that ToPR—and success of the Westfalias—begins with departments planning and executing in unison. "We are finding ways to work together to make our processes better, and to make our equipment more reliable," Hogg says.

Trying to implement change while forging partnerships between departments with disparate duties can lead to difficulty in a manufacturing environment. Without it, however, the equipment will suffer. For ToPR to fully succeed requires drastic change and, ultimately, a challenge to the culture. As an example, equipment reliability can no longer be solely the burden of service personnel. ToPR stresses that maintenance of mission-critical equipment is the responsibility of all who have a role in its function.

According to Eddie Hairr, senior production specialist and ToPR team leader, some employees were a bit hesitant when ToPR was first introduced. Not anymore. "In the beginning," he remembers, "technicians were apprehensive about participating. Now I have too many volunteers for each scheduled event. It just goes to show that people want to be part of something successful."

### Building a new culture

What happened to alleviate employees' unease? Hogg found ways to make the partnerships and the changes work.

"We formed Equipment Improvement Teams (EIT) to take a formal approach to bringing employees [maintenance, operations and engineering] together. It's a diverse and collaborative team," he points out. "We take a piece of equipment out of service and restore it to like-new or better condition. Through this process, employees experience first-hand the value that ToPR offers. In learning more about the equipment, they then become ambassadors for the culture we're building."

EIT events are typically a week in length, with emphasis on teaching employees how to care for the equipment and the equipment's functions (Theory of Operations).



**Purification Technician Julie Monteiro polishes the edges during the Westfalia EIT.**



**Technician Joe Standley works on a Westfalia centrifuge during an EIT.**



## TPR facilitates a cultural change at every level.

Personnel also learn how to conduct CLAIRE—which stands for *Clean, Lubricate, Adjust, Inspect, Repair (minor) and Eliminate*. During the week, the team develops standards and Single-Point Lesson Plans (job aids) to maintain the equipment condition and an audit process to ensure it stays that way to “inspect what you expect.”

Technician Julie Monteiro speaks to the value of the collaborative aspects of the ToPR implementation. “Having the operators and mechanics working together to refurbish the Westfalias bridged a gap between us. Operators are on the front line of manufacturing, and now a ToPR-trained operator understands how and why a piece of equipment works. Because of this program, operators and mechanics are speaking and understanding the same language.”

Hairr shares Monteiro’s sentiments. “Our technicians have defined ownership and coupled it with empowerment and improvement to make positive changes in both our equipment and work culture,” he says.

### Training leaders

Cross-departmental training is another tactic being used to amplify the relationship between maintenance and operations. “In addition to participating in the EIT events on Westfalias, the maintenance department teamed up with trainers in the purification department to provide hands-on assembly training with each operator in the production department,” explains Maintenance Technician Ronald Crocker. “The training helped improve operating equipment knowledge and resulted in a lower number of assembly errors.”

The type of teamwork needed to improve Talecris’ centrifuge uptime didn’t just happen. It called for intense training and leadership—in the classroom and on the floor with operators and mechanics.

Monteiro learned how critical the classroom hours spent on ToPR were to the ongoing operation of the Westfalias. “Investing the time and money to educate employees was money well spent. We have become ambassadors of the program and will continue to advocate proper use of the equipment.”

Joe Standley, a purification technician, left the training sessions with a profound new understanding of how to manage the centrifuges and technology on the floor. As he puts it, “We saw what kind of damage was occurring to our equipment, and the ToPR process showed us exactly what was being done to cause it.”

Another component of the team’s training involved “5S” events (*Sort, Set in order, Shine, Standardize, Sustain*). Through these events, team members make equipment and workplace upkeep a priority. Focusing on cosmetic and mechanical order helps establish an operational respect for the equipment, thus helping employees learn to better care for it. It also creates a department-wide sense of ownership of the equipment. Since the 5S events also involve a diverse makeup of personnel, they create unity for the mechanics, operators and engineers.

Standley was pleased with the results of these events, noting he has “seen a complete turnaround in the centrifuges that we used for events. They are cleaner, they function more efficiently and they are better maintained.”

### Calculating the results

With more than 100% improvement in some of the centrifuges, it’s apparent that Hogg’s team has generated tremendous benefits on the production floor. And the numbers don’t lie. One metric used to track ToPR effectiveness is Mean Time Between Failure (MTBF), which measures failures against operating hours. As a result of the EITs, the MTBF of one Westfalia centrifuge increased from an average 21 days between failures to 415 days and counting.



A test for the Westfalia: balancing a nickel while running; that’s precision.

John Kostoulas (l), purification engineer, and Bruce Edwards (r), purification technician, work on the Westfalia during an EIT event.



Another Wesfalia unit's uptime is currently averaging 215 days—at one time, it was functioning at 101 days.

Kevin Pait, director of Plant Engineering and Maintenance for the Talecris operations, is a member of the ToPR Steering Council (made up of Talecris' senior leadership). To his way of thinking, the reason for adopting this strategy was clear. "We chose ToPR because we needed a systematic approach that involved the entire organization, from senior management to operators and mechanics. It incorporates ownership through cross-departmental team events and activities. I felt the use of defined processes such as team charters, job aids, work plans, Key Performance Indicators, extensive training and equipment guides was exactly what we needed. Cultural change is slow, but moving in the right direction. We are pleased with the results."

In fact, the Talecris ToPR program has yielded exceptional results. The production of life-enhancing therapies is more efficient, orderly and productive, directly reflecting two of the company's seven core values: Operational Excellence and Teamwork.

TPR facilitates a cultural change at every level. It emphasizes leadership and the communal ownership of equipment and business technology. Most importantly, it assists employees in achieving a vision they believe in: providing therapies that improve people's lives. **MT**

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## The ABCs of TPR

Total Process Reliability (TPR)—on which the Talecris "ToPR" efforts are based—is an outgrowth of Total Productive Maintenance (TPM), a methodology that began with the Japanese engineer Seiichi Nakajima. He studied American Preventive Maintenance in the 1950s and spent the next 20 years refining his ideas and developing Total Productive Maintenance.

TPM was introduced to the United States in the mid-1980s. TPR is the next generation after TPM in that it incorporates contemporary tools such as Lean, Six Sigma and Breakthrough Strategy. It also is more focused on operational improvement than TPM. In short, TPR is a process to improve equipment efficiency and lower costs by involving the entire organization in asset management.

Part of the process calls for the chartering of a TPR Steering Council to focus support and direction for the initiative and to engage leadership in the process. An Implementation Team is also formed to develop and execute an operational plan. Breakthrough and

Focus Teams are chartered to work on specific issues and systems.

Equipment is selected for the initial focus. Benchmark visits of outstanding operations are made to study exemplary performance and help leadership gain a vision as to what World Class looks requires.

Steps include educational sessions, training events, and chartering teams to work on specific issues. Equipment Improvement Team Workshops (EITW) are conducted on critical equipment to restore it to design limits and to gain ownership and knowledge of the equipment by operations personnel.

Typically, savings from TPR will include a 25-30% reduction in maintenance costs, a reduction in emergency maintenance to less than 5% of total maintenance activity and availability improvements of up to 95%. Other benefits include better teamwork, closer relations between maintenance and operations, better morale and a cleaner and safer workplace.