SOS Survival Guide
Seven Steps to Sustainability & Growth

Survive, Organize, Sustain, Grow

Competition is growing daily.
The price realization of gas in the cylinder is on the downward trend. The loss of cylinders due to inaccurate tracking methods is nearly 100 to 200 cylinders a year. In addition, customers\ distributors hold cylinders longer than expected. Over the last five years, Technology Solution Partners (TSP) has analyzed data from multiple installations of their TRAKAID CyTRACK Industrial Gases Cylinder Tracking, Logistics, and Management System (CyTRACK) and found almost 25 percent of cylinders are with customers more than six months. What does the Industrial Gas Bottler do to survive? Cutting corners in quality, bumping cylinder rotation, and ignoring cylinder testing for safety are some of the methods employed.

Still thinking of Return on Investment (ROI)? ROI is easily achieved once annual cylinder loss is stopped - which the CyTRACK system helps eliminate from day one. The challenge, TSP believes, is how to survive in this cutthroat competition which is using all kinds of bad practices.

*trak*aid
Digital Trail of Your Assets

TSP is pleased to share its experience with industrial gas manufacturers and bottlers, based on numerous installation and data analyses. The company developed the Survive, Organize, Sustain (SOS) Survival Guide for the Industrial Gas Bottling and Manufacturing business.

First, avoid the five deadly mistakes:

Defects: Wrong gas in wrong cylinder \ Delivery of empty vs. filled cylinder

Waiting: Production bottlenecks during morning shift due to laborious manual data entry

Production: Fill fewer cylinders than optimal

Delivery: Cylinders marked for one customer are delivered to another customer

OverIssue: Cylinders issued to a customer that exceed the customer's holding limit

Then follow the
Seven Steps to Sustainability, as outlined below

Accuracy: Trust your data

Traceability: Know the What, Where, When, Why and How of your cylinders

Safety: Focus on Patient, Customer and User Safety - Single biggest challenge

Mobility: Actionable data at the point of use

Innovation: Processes that take advantage of new technology

Assets: Analyze assets and apply controls to manage them

Performance: Fully supported robust system that lets you focus on your business

ACCURACY:

A typical day for an industrial gas manufacturer and bottler - a "Bottler" that started the business with 5000 cylinders - normally has 1500 cylinder transactions: 500 come in – 500 are filled – 500 are dispatched. With the prevalent practice of reading and writing a number, then entering it into a system (if one exists), 300 entries are wrong, transposed, or illegible. You, the "Bottler," do not trust your data. More importantly, neither do your distributor or customer. The end result is the "Bottler" cannot demand cylinders from its customers. Due to these issues, at least 100 to 200 cylinders are lost and untraceable annually.

TSP studied bar code and Radio-Frequency Identification (RFID) technology in order to automate the data acquisition process. In the harsh industry conditions they are subjected to, bar codes need to be replaced frequently - often annually - as they become unreadable due to scratching, mud and oil. RFID global standards were established in 2006, and TSP harnessed this technology for the cylinder industry in 2008. TSP developed hard, curved tags which encase an RFID chip and antenna (RFID Inlay). The RFID Inlay does not need a line of sight, has a unique identification number, and can be read from a distance, overcoming all the shortcomings of a bar code. The neck of the industrial gas cylinder was found to be the most appropriate place to bond the RFID tag, based on more than 2,000 hours of testing. Once this RFID tag is read, all the cylinder information is in the hands of the user: test date, serial number, cylinder status, cylinder rotation status, etc. This means cylinder data acquired is error free, automatic and faster. So much faster that in a typical day all the early morning production bottlenecks due to manual data entry are removed, and no back end staff for data entry is needed.

Radio-frequency identification (RFID) is the wireless non-contact use of radio-frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Passive tags (without battery) are read at short ranges (a few meters) via Ultra High Frequency (UHF) waves. (Reference http://en.wikipedia.org/wiki/Rfid)

TRACEABILTY:

In the absence of accuracy, the "Bottler's" effort to create paperwork to trace cylinders goes to waste. To overcome this problem, "Bottler" depends on the customer's holding cylinder quantity and total average cylinder rotation. The Customer starts rotating the same set of cylinders to bump up the average cylinder rotation. Customer holding remains the same. "Bottler" is happy, although it notices that rejected test cylinders are sometimes returned with the cylinder number painted over to cover up the cylinder count. This is the hidden cylinder loss that "Bottlers" are now facing.

In another instance, the customer receives a cylinder with the wrong gas or no gas or under the wrong pressure.   This has major negative consequences for both "Bottlers" and customers and for patient safety in health care.

Through the use of TSP's TRAKAID RFID Tags, the Tag reading may not be faked; the RFID tag may not be duplicated as each tag is unique, unlike a bar code which can be printed at any time and can be duplicated. It is unlikely that a discarded cylinder will be returned to the "Bottler".

With 100 percent data accuracy and no possibility of faking a tag\cylinder read, CyTRACK provides 100 percent traceability of the cylinder in the fast moving rotation.

SAFETY:

Safety is the biggest challenge "Bottlers" face. Current practice depends on the "Bottler" eyeballing test dates when a cylinder is filled. Even diligent production people have trouble when the test date ring is missing or the test date is not readable (which happens frequently), leaving nothing to eyeball. Production people are working non-stop to meet production targets, making it impractical or impossible to even look at the test date.

A single accident handling a cylinder can ruin the "Bottler". Customers will avoid "Bottlers" and workers will be unwilling to work in an unsafe environment that requires they work with cylinders out of test certification and bad safety records. More than 50 percent of cylinders have not been tested by their test due date, setting the "Bottler" up for accidents.

CyTRACK has built in processes that keep safety standards high. As soon as an RFID Tag is read, all the information contained on it is available to the user. TSP uses this information in all processes to stop a cylinder past its test due date from being used. In fact, CyTRACK allows the user to mark a cylinder for removal from the process and schedule it for testing.

This eliminates the biggest safety challenge of using cylinders past their test due date.

INNOVATION:

Current practices have been in place for the past 30 years and were driven by manual record keeping. Some software solutions have emulated those same processes resulting in data that is not trustworthy. TSP has adapted the business processes to take advantage of the latest multiple new technologies. The confluence of web, database, mobile, and RFID technologies has led to multiple process innovations that not only increase productivity and enhance process validation, but also provide the ability to receive error-free fast automatic data acquisition.

TSP has incorporated hundreds of process improvements in CyTRACK to make the solution more responsive to the user. Mobile processes have helped bring the latest cylinder information to the fingertips of the user. Each process in the rotation of the cylinder is validated before the next process can take place. Users may mark the cylinder as damaged at the time of pickup from the customer. An Intake Screen captures all cylinders in one truck so the user does not have to separate the cylinders from different customers. Each fill job is associated with the Batch for traceability.

MOBILITY:

The last leg is where major errors occur in delivering and receiving cylinders from customers. When the "Bottlers" truck has a multiple customer load, the driver unintentionally delivers the wrong cylinder to the wrong customer and compounds the mistake by making typical errors in reading and writing the receiving cylinder data on paper. This makes it very difficult to trace the cylinder. Writing manual receipts leaves no time for the driver to check for cylinder damage. Once the cylinder reaches the "Bottler," it becomes a point of contention with the customer. The customer complains that they should have been notified at the time of pickup.

TSP's TRAKAID MPLANT and MDIST solutions have leveraged Mobile Computing Technology to introduce high performance to the hands of the users: the receiving person, the filling person, the dispatch person, and the driver. Once a user reads the RFID Tag with the mobile RFID computing device, they have captured all the information about that particular cylinder.

TSP has built intuitive processes using mobile technology that eliminate errors, enhance collaboration and transparently interface with the CyTRACK web-based system, thus driving transactions faster. "Bottlers" may get up to 100 percent increase in productivity.

These processes help the driver download information in order to deliver the right cylinders to the right customer and make data acquisition faster.

This, in turn, gives drivers time to mark cylinders for physical damage in front of the customer, eliminating customer complaints later on.

ASSETS:
Cylinders are the "Bottlers" most critical asset and cylinder cost is very high. Based on a cylinder operational cost including finance, depreciation, maintenance, and testing, it is estimated that "Bottlers" should have at least 30 rotations annually for each cylinder. Typical visible cylinder loss is between 100 to 200 cylinders per year. The practice of switching a new cylinder and returning the recycled reject cylinder adds to the financial loss. The largest hit to the bottom line occurs when cylinders are tracked by cylinder count for each customer. In-depth data analysis shows more than 25 percent of total outstanding cylinders in the customer's possession are with them for more than six months, making this asset useless for the "Bottler."

CyTRACK solution has put in place undisputable traceability for the cylinder. Using mobile technology, the "Bottler" knows where the cylinder was last, making the chance of a cylinder getting lost remote. CyTRACK provides numerous controls the "Bottler" can implement to manage customer holding. Focused analysis reports are available that the "Bottler" can run on the fly and analyze the cylinder holding pattern

of a customer. The "Bottler" can also run reports that show cylinders that are due over a certain period and focus on recovering them.

TSP's comprehensive solution makes it impossible for the switching practice as discussed above to succeed.

PERFORMANCE:
CyTRACK is a comprehensive solution that helps the "Bottler" manage the cylinder through every rotation – receipt – fill – issue – load – deliver – pick up – service – testing and the complete life cycle. The solution and the processes are robust, incorporate good manufacturing practices, sound information governance, and have been thoroughly tested on the production floor. The processes are optimized for fast response and are based on proven industry experience and domain knowledge.

Mistakes including delivery of a cylinder to the customer that is empty, filling a cylinder with the wrong gas and incorrect cylinder count in any job are completely eliminated. In addition, the daily morning production bottleneck due to laborious manual data entry is gone and illegible or transposition errors during data collection and entry are avoided. The CyTRACK solution provides instant and complete information on the cylinder and is available to the user at the point of use.

The CyTRACK solution is supported by a group of experienced engineers who have in-depth domain knowledge of the cylinder business. TSP supports your technology solution while you focus on your business.