

POINT & CLICK  
ON BOLD LINKS



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Edited by  
Rosemary E. Lunn  
and Peter Symes

# Equipment

## Mares Loop XP

Are we looking at a smart innovation that will prevail? Will this regulator design provoke a rash of "me too" products from other manufacturers – a trait that Mares is also guilty of – or is this a "wacky fad" that will fall by the wayside? So why was the Loop conceived? This was originally designed specifically for the tech community as a stage regulator. However, during trial dives, the Mares test divers reported that the Loop was comfortable to dive and the mouth was not stressed by the hose pushing on the right hand side of the second stage; hence, it has been also rolled out to recreational divers. I can, however, see some merit in the Loop as a stage reg. A bailout cylinder is generally sidemounted (as opposed to chest- or back-mounted). Depending on how the cylinder is rigged, how it is attached to you, and how much gear you are wearing, it is possible for the bailout reg to pull a bit in your mouth. I think the hose routing on the Loop may well make deco more comfy for techies because there is no kink in the hose. It is a straight run from the first stage and into the mouth.

**Mares.com**



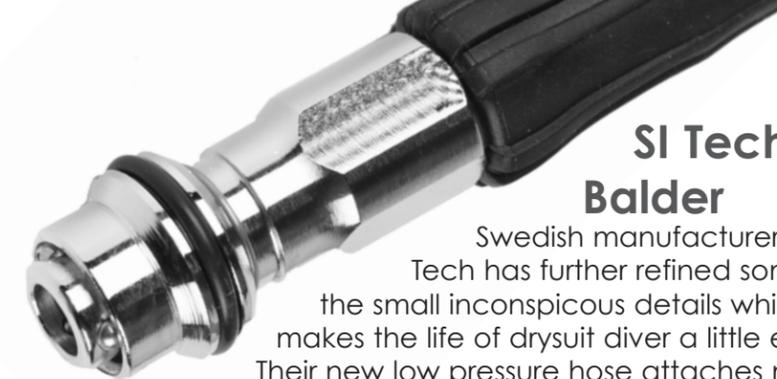
## XS Scuba Switch

The Switch mask has been designed to allow divers to change filter colours on the fly. This mask has a slot that sits in front of the mask's permanent face plate, and because there is no "back" or "front" to the lens, you can slide in a filter using either hand. Three filters come as standard: red, amber, dark tint. Divers can additionally purchase Magenta (green water diving) and black (simulates no visibility conditions). **XSScuba.com**



## Galileo G2

The G2 benefits from a high contrast, user-configurable colour display, hence this model is lighter and smaller (205g / 5.6 cm or 2.2 in) than the current Galileo (290g / 8 cm or 3.15 in). Key features have been retained, such as the simple 3-button control system and body monitoring, ie heart rate, skin temperature, breathing rate and water temperature. Users should note this is not Nirvana, the data provided is very basic, but it is a step in the right direction to full physiological monitoring. The rechargeable G2 comes programmed ready-to-dive for trimix, apnea, CCR and sidemount / un-manifolded twinsets, with the diver able to download their data using Bluetooth. Other features include the choice of different languages, integrated bungee or retractor clip mounts, and CNS warnings when oxygen update reaches 75%. **Scubapro.com**



## SI Tech Balder

Swedish manufacturer Si Tech has further refined some of the small inconspicuous details which makes the life of drysuit diver a little easier. Their new low pressure hose attaches more readily and has less o rings and components, therefore it is easy to use and maintain. This hose comes in various lengths (15 cm / 5.9 in to 130 cm / 51.1 in) with the standard length being 80 cm / 31.4 in. **SITech.se**

## BARE AquaTrek

BARE - the Maltese drysuit manufacturer - has launched a lightweight trilaminate drysuit. Apparently it is meant to be lighter than a traditional trilam suit, however we cannot find any data on just how lightweight it is. BARE states that their exclusive Cordura nylon Oxford 4-Layer breathable fabric "offers enhanced flexibility over current butyl trilaminates." This suit is fitted with a low profile plastic zip which offers good flexibility on the front entry suit. Whilst there certainly have been problems with plastic zips in the past, the zip manufacturers have worked hard to get a lot of these issues solved. The telescoping torso has a field replaceable crotch strap, and where BARE deem there to be "critical wear" on key points on seams, they have double taped them with a flexible material to provide additional durability. Other features include braces (suspenders), 2mm nylon / smoothskin warm collar and knee pads. **Baresports.com**





## Introducing the COSMIQ+ by DeepBlu

Text by Matthew Meier

**The COSMIQ+ is the world's first dive computer with its own social network and app. I had the pleasure of diving with the COSMIQ+ on recent trips to French Polynesia and the Philippines, and it performed beautifully.**

The computer itself has a big 2.2-inch LCD screen with large, bright colorful numbers, making it easy to read, even at night. In scuba mode, the display shows depth, dive time, no-deco time, time of day, water temperature and maximum depth—all on one screen. So, there is no

need to push buttons, or jump between screens, to be fully informed. Nitrox can be set from 21 to 40 percent, and this may be changed either on the computer or through the app.

### Conservatism

A safety factor may be set through the app so that the computer performs in either a conservative, normal or progressive manner, and the ppO<sub>2</sub> may be set from 1.2 to 1.6. In comparison to my normal dive computer, the COSMIQ+ was more conservative, thus adding another layer of safety to the dive. Depending on your preference, the computer can start in scuba mode, gauge mode or freediving mode as soon as it is submerged in water. While underwater, the COSMIQ+ will beep if you are ascending too fast,

nearing decompression limits, low on battery or if you have hit a user-defined maximum depth or dive time, which you may set through the app. At this time, it is not possible to change or turn off these alarms.

### Synchronization

The COSMIQ+ syncs wirelessly, via Bluetooth 4.0, to the Deepblu app installed on either a smartphone or tablet. The app allows the user to change various settings on the computer that cannot be accessed through its two buttons, when not connected. Once synced, you may set the measurement units to imperial or metric, and the pressure display to Psi or Bar. You may also set the safety factor, ppO<sub>2</sub> level, nitrox percentage, salinity, altitude, starting mode when submerged, screen timeout duration, backlight intensity and alarms.

The app is constantly being improved, and these upgrades are passed along for free to users via frequent firmware updates. Since Bluetooth does not need the Internet to function, the app and the computer can still communicate perfectly while you are on a liveaboard or in some remote corner of the globe with no contact with the outside world.

### Charge

The battery life of the COSMIQ+ has been improved with the most recent firmware update and the new smart power-saving mode, now allowing up to 12 hours of dive time between charges. Even before the update, I had no prob-

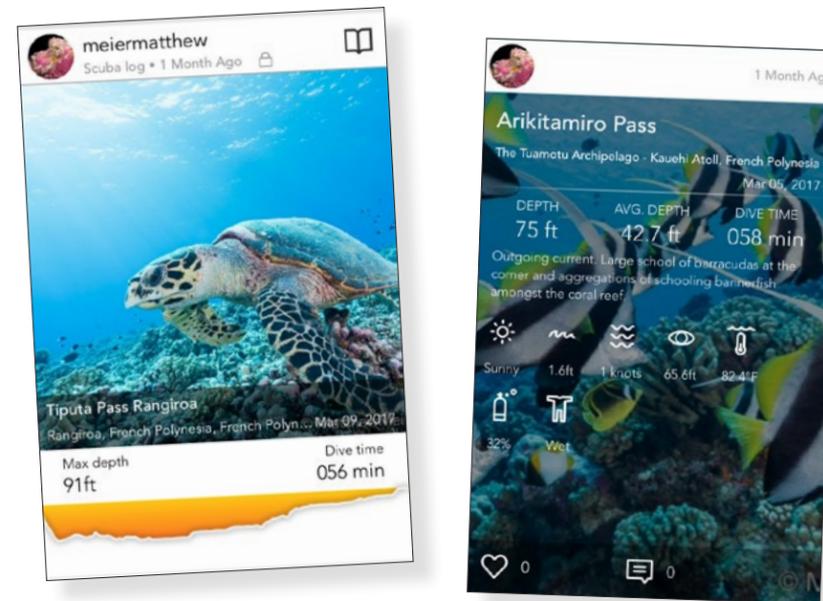
lems getting four to five dives per day out of a single charge. The unit charges with a magnetic USB cord that attaches to the gold-plated charging pins on the back of the computer. Simply rinse in fresh water, dry the contacts and it is ready for charging. In my experience, the recharging time was less than two hours, and I found it easy to do nightly, while downloading my dive logs, so the computer was ready for the next day.

The Deepblu app is intuitively easy to use and navigate. Data transfers from the computer quickly and wirelessly via Bluetooth, so there are no extra cables to worry about. Each dive is logged in the app and contains dive times, depth and water temperature. The user can then go in and edit each dive log to specify dive sites, dive buddies, dive gear used, plus water and weather conditions.

It is also possible to attached photos and videos to each log, and they will post at the appropriate spot on the dive timeline, as long as your camera and computer are set to the same time. Just like you would in a hand-written logbook, a written description of the dive may be added through the app. Another nice feature, if you happen to make a dive without the COSMIQ+, is that you can manually enter a dive log into the app as well.

### Logging

Dive logs may be posted privately or publicly on the app, and other COSMIQ divers may comment on your posts or



individual photos. This is a great way to interact with fellow divers, underwater photographers and videographers. You can use the app to search for dive buddies or dive destinations, and even share your dive logs on other social networks such as Facebook. The app is a great resource to research a location for a future trip, or find out what kind of underwater life has been seen recently in a particular area.

The original Deepblu app has been expanded into a full-fledged social network, with dive-related news and content. This online community may still be accessed through the app on your tablet or smartphone, but now also exists on a web browser platform so you can surf from the comfort of your home computer or laptop ([Deepblu.com/discover/live](http://Deepblu.com/discover/live)). Here, you can share your stories with other like-minded individuals, read original news content and join special interest groups within the community. Making it even easier for divers and businesses in the dive community to stay connected.

### Verdict

The COSMIQ+ is a well-designed, stylish and affordable dive computer that comes with the added bonus of connecting you to an extensive network of divers from across the globe. If you are in the market for a new dive computer, the COSMIQ+ is a great choice. ■

**Deepblu.com**



COSMIQ+ dive computer, with its own social network and app, by DeepBlu



## Putting Buddy-Watcher to the test

Text and photos by Massimo Boyer  
Adaptation by Peter Symes

**From our first basic dive training, it is impressed upon us that we should always keep an eye out for our buddy and be within reach in case assistance is required.**

During that same first course, we are, however, also taught emergency procedures such as the Controlled Emergency Swimming Ascent (CESA), which is to be performed if we estimate the safer option is to reach the surface rather than waste time trying to get the attention of a distracted companion. In that regard, to be fair, we also have to acknowledge that we could ourselves be this distracted diver who does not pay attention to the well-being of his or her buddy, because we get too absorbed with our activities and find ourselves out of reach and unable to provide immediate support if so needed.

Let's be honest with ourselves: Haven't we all been in the situation where we wanted or needed the attention of our

dive buddy but found ourselves unable to get it right away? After countless shakes with a rattle or vigorous banging on our tank, possibly accompanied by some expletives, our buddy finally turns around, looks at us with a puzzled expression as if asking, "Yes, what do you want?" before swimming towards us in an all-too-leisurely pace.

Hitherto, the dive industry has not come up with any great solutions as to how you get your buddy's immediate attention.

The various devices invariably use sound in some form or other, although as we all know, or should know, noises are not the best means of communicating underwater. Sound may travel fast, but underwater, it is difficult, if not outright impossible, to establish the direction from which it originates, and wearing a hood, or being a little distracted, is all it sometimes takes not to hear a signal.

Add to this the noise that the various shakers, bangers and

other noisemakers cause, often drives diveguides bonkers. It may be quite convenient for the divemaster to have such a device when guiding, in order to call the attention of his or her group, but imagine if every single diver in the group carried one and put it to good use. What a racket! It might well be the end of tranquility underwater as well as the start of a major headache for the poor divemaster.

Enter the Buddy-Watcher, which is a wrist-worn electronic gadget that synchronizes

with units worn by other divers. Using ultrasound, signals can be sent between paired units, causing the receiving unit to buzz and vibrate. Thus, other divers are not disturbed. Units are paired by pressing and holding down the main button on each unit for some seconds, in order to turn them on. A buzzing sound is heard, and the pairing process starts automatically. After a short pause, both units will vibrate to signal that they have been successfully paired. It is also possible to perform a manual pairing.

A master device (bought separately) allows a dive leader or guide to silently call several members of a team simultaneously.

According to stated specifications, these units have a range of up to 80m and also work around obstacles, where there is no direct line of sight between the divers.

As the units, however, do not provide any directional information, it can just be used to call for attention, and divers wearing these must still, at all times, be aware of the whereabouts of the other diver. Tip: If separated by some distance, the bubbles of your buddy can often be spotted by looking towards the surface. The units are depth rated to 60m.

### Verdict

The unit is quite handy and useful in many contexts. For example, safety matters aside, it allows an underwater photographer who spots a skittish subject to silently and discrete-

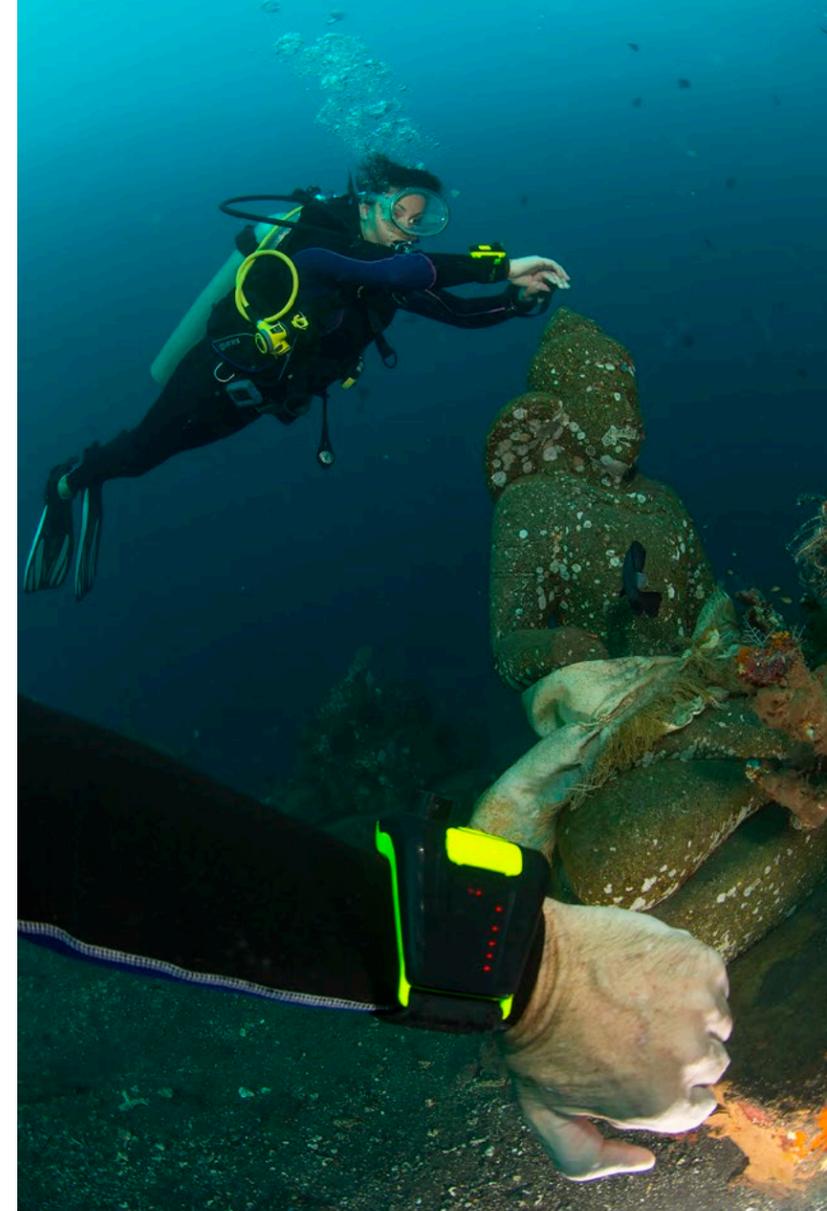
ly signal his or her buddy, simply by pressing a button. It is quite straightforward to use.

At a first glance, the finish on the unit seems a bit plasticky—perhaps due to those big green buttons on its shiny black body. But it does appear otherwise robust.

The units are charged via a (mini) USB cable. Citing environmental concerns, USB chargers are not included; just a cable is included, as ubiquitous standard mobile phone chargers can be used.

Also in the box (the standard box comes with a pair of units) are straps of various lengths, so the units can also be fitted around drysuits. ■

*Communication underwater is not easy.*





# Annual cylinder inspections are not that bad

The article, "UK under pressure to test cylinders annually," published in the previous issue (#79) was informative, but appeared to be unfairly attacking standards in the United States. Without getting into some of the specific arguments, since they are subjective, I would like to address the misinformation on how annual cylinder inspections are conducted in many countries.

Text by Don Kinney

I understand in the United Kingdom, a scuba cylinder undergoes a visual inspection every 30 months and a hydrostatic requalification every five years. The UK dive industry was upset that the ISO (International Organization for Standardization in Europe) was looking at an annual visual inspection standard for cylinders. The process that the Inspectorate for Diving Equipment Servicing and Testing (IDEST) requires for a scuba cylinder inspection is a very thorough inspection, and I support all the steps. My concern with the aforementioned article is how it describes how cylinders are inspected in the United States: "...the valve is whipped off, a technician takes a look and puts the valve back in." This could not be further from the truth.

## Same procedure

We follow all the steps listed by IDEST, apart from the mandatory use of a Go/No Go gauge (see info box right) for the threads and mandatory valve rebuild.

I am not saying that the use of a Go/No Go gauge is not beneficial. There have been several incidents when the wrong valve is placed in the wrong cylinder. That, in turn, damages the

threads and makes the cylinder unsafe, creating the possibility of a rupture. However, if an untrained person forces the wrong valve on the cylinder, at some other point in its use after the inspection, then no training can predict that error. During a proper visual inspection, with or without a gauge, the damage to the threads should be obvious to any properly trained inspector.

## Rebuilding valves

We also train inspectors in the process of rebuilding valves. It is not mandated to rebuild the valve if it is working properly. The cylinder inspectors are trained to test the valve and determine their continued safe use. They can voluntarily take it upon themselves to repair or rebuild the valve or tell the owner that the valve did not pass and therefore was not placed back on the cylinder. In either circumstance, it is documented on the inspection form and final determination is made by the inspector and user.

I was also bothered by the statement: "This new ISO standard is being driven by a number of nations, including those that primarily dive with aluminum diving cylinders, where there have been issues with cylinder necks cracking."

I do not know of a nation that pri-

marily dives with aluminum cylinders. There are currently steel, aluminum and composite cylinders approved for diving. Each one of these materials has its positives and negatives, and the diving consumers generally drive the market.

Some like steel for the buoyancy characteristics, others like aluminum because of its corrosion characteristics and others enjoy composites because of their weight and increased pressures. However, all cylinders have their concerns when placed in the hands of users.

## GO / NO GO Gauge

A go-no (or go/no-go) gauge refers to an inspection tool used to check a workpiece against its allowed tolerances. Its name is derived from two tests: the check involves the workpiece having to pass one test (go) and fail the other (no-go).

It does not return a size or actual measurement in the conventional sense, but instead returns a state, which is either acceptable (the part is within tolerance and may be used) or unacceptable (the part must be rejected).

Source: Wikipedia

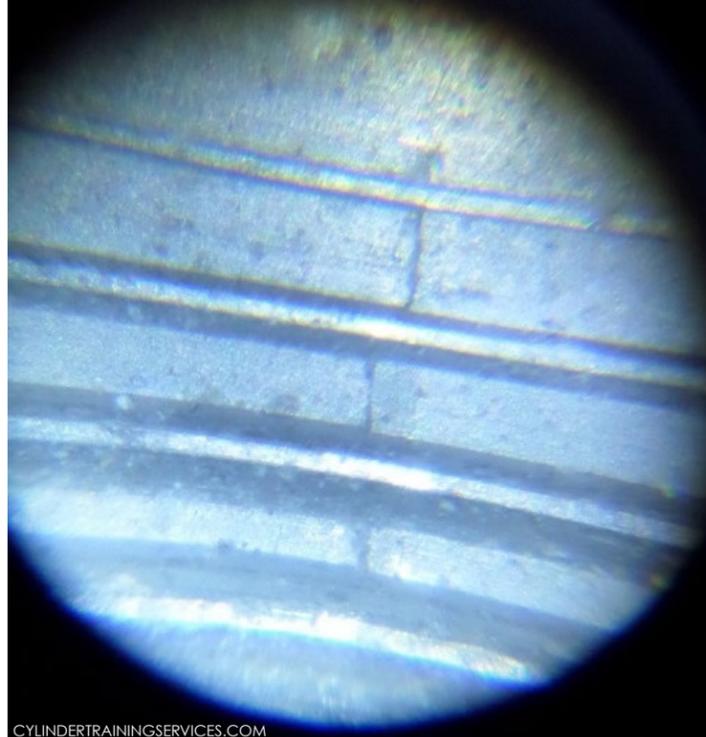


Photo of tap stop marks in threads. These are simply machining marks and has no effect on the structural integrity of the cylinder.

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## Cracks are rare

The stated issue of cracks in the necks of aluminum cylinders was years ago and involved only one specific alloy. Even within that alloy, ruptures are rare. Out of over 40 million cylinders manufactured with the 6351 alloy, only 20 were suspected of rupturing due to cracking (web stats). So, using the math, that is less than a .0000005 percent chance of a rupture with that one specific alloy. I'd like to state that ALL cylinders are safe—if inspected regularly, used properly and removed when they become unsafe.

## Tap stop marks

The article also stated that 75 percent of cylinder failures are due to issues with the threads. I cannot dispute that claim without seeing the data being mentioned. Without seeing the specific data, I would guess that part of the issue is machine marks in the threads.

There is a common concern when inspecting a cylinder's threads and interpreting the results. We find that many people see a *tap stop mark*, and unjustly name it a crack or flaw within the threads. A tap stop is simply a machining mark and has no effect on the structural integrity of the cylinder.

I would say that tap stop marks are common on many cylinders, and not a reason to fail a cylinder. I state that all cylinders have

a rare probability of cracking; whether they are aluminum or steel. Other flaws in the cylinder threads (improper valves) are normally caused by the user and should be caught by the inspector during the visual inspection process.

## All treated equal

Furthermore, it was stated in the article that in the US, cylinders are not all treated the same way, and there is a classification for "sport and recreation." I have never heard that phrase and have no idea where it would have been found.

In fact, when we train visual inspectors, we train them to inspect all cylinders regardless of usage. A cylinder may be used in scuba, fire service, beverage or scientific industries. It does not matter what industry; all that matters is that the cylinder is safe to use.

This is determined by wall thicknesses, obvious dents, threading concerns or other safety concerns noted during the inspection. I can more easily argue that most cylinders are "commercial cylinders" since they are all used in industries that exchange commerce.

## A question of cost?

I do not know if the proposed standard would have put the divers at risk.

The argument is made that with an increased cost of an annual inspection, divers would have found ways to avoid the new procedures. The question should become: What fee is the consumer charged for the annual inspection?

Since the article has already

focused on the United States. I will use some pricing from that region. Depending on the inspection facility, the consumer pays US\$15-25 for an annual inspection. They then pay an additional fee of \$20-25 every five years for the hydrostatic requalification.

It has been my experience that most divers have no problem paying \$25 every year to ensure the safety of their cylinders. And I can also say that paying \$25 per cylinder per year is a lot less expensive than buying and maintaining a personal compressor system.

## Corrosion can happen fast

The final point I will make about the article is for the benefit of an annual inspection. In my experience, many issues have developed within a cylinder within a year's period. The photo (left) shows excessive aluminum hydroxide corrosion I found in a cylinder within 365 days of its previous inspection.

Also, back in the 1970s, the University of Rhode Island found that corrosion in a steel cylinder can affect its gas content, and corrosion factors in as little as 100 days. A well-maintained cylinder can go years with no issues. A misused, neglected or abused cylinder can be compromised well within a 30-month inspection cycle.

## Frequent

The annual visual inspection process for dive cylinders in the United States is a voluntary procedure developed by divers back in the 1970s; no government agency mandated the process. US divers have been getting their cylinders annually inspected for decades, with no obvious financial concerns.

It is not a perfect system, and some try to get around the practice, but most do not. The more



Aluminum hydroxide corrosion

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often a cylinder is inspected, the greater chance of catching an issue before it becomes dangerous. It takes a proper visual inspection on all cylinders to help prevent ruptures and other catastrophic events. ■

*Don Kinney is the owner of Cylinder Training Services and has been teaching cylinder inspectors since 2001. He has developed training programs for using and inspecting cylinders, and has developed tools for conducting a proper inspection of those cylinders. He is the author of the ITI manual for visual inspection procedures and helped develop the ITI visual cylinder inspection program. He has authored over 12 articles on inspections, cleaning and rules and regulations involving high-pressure cylinders.*

