



● ● ● REGIONAL NEWS

New England



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The New England Region held its spring meeting on April 21 in the town of Pepperell, Massachusetts. A quaint little town with a population under 12,000 and home to one of the three covered bridges in Massachusetts that is open to public motor vehicle traffic. Our host was Masy BioServices, a provider to the pharmaceutical, medical device, biotechnology, and regulated industries markets. Breakfast was provided compliments of ProTEQ Solutions.

Our first speaker was Adam R. Fleder, President of TEGAM. There were two distinct calibration challenges presented, and Adam detailed how TEGAM addressed each. Adam described how TEGAM established a traceability path for a 9 kHz to 18 GHz RF standard (a range that is beyond the range of NIST's calibration service) at 1mw. This first need arose as customers have RF power sensors they wish to calibrate down to 9 kHz, yet NIST does not maintain a standard for RF Power below 100 kHz. Adam indicated the process was "started with the end in mind."

So, without a directly traceable measurement available, a convergence of several individual elements was required. In determining the available and relevant alternative measurements consideration was given to physical dimensional, temperature, DC, low frequency, and RF components. For this low power application, TEGAM utilized a matched thermistor pair in the RF signal path. The required level of measurement uncertainty was evaluated and obtained at each step along the way. Error sources evaluated included contributors of impedance, AC voltage DC sensor and mismatch measurement.

The second need was to produce a NIST traceable system to calibrate Bird Technologies© model 43 watt meters and similar items. There have been more than a million of these devices made, and they are used in the industrial, scientific, and medical fields. This required the development of a 100W RF standard that operates between 250 kHz and 1 GHz. This challenge included consideration of additional error sources, to include RF mismatch, thermal leaks, thermopile nonlinearity, and coolant properties. The presentation provided great insight to TEGAM's Innovative thinking with regard to traceable measurements. TEGAM now offers both calibration services and systems to address both challenges.



Adam Fleder, TEGAM



Joe Brown, Northeast Marketing

The podium was next handed over to Cesar D. (Jun) Bautista, Jr. PhD, Senior Director of Laboratory Operations at Masy BioServices for the presentation on a “New Concept in the Calibration of Climatic Chambers.” As a starting point, the traditional types of humidity devices were presented and measurement uncertainty principles reviewed. As measurement of RH is complex compared to many other parameters, RH has a high measurement uncertainty. In more depth, the uncertainty elements for the different measurement techniques and systems were explored. Systems include dew-point generators, chilled mirror hygrometers, impedance hygrometers. A newly designed (GEO Test) portable secondary standard and its measurement principles were presented. Tests done by Masy BioServices illustrated that the new design meets many of the most stringent market demands.

Our afternoon kicked off with Joe Brown, and Electrical Engineer from Northeast Marketing. Northeast Marketing are the Fluke representative in New England for electrical products. Joe gave an introduction to the group on the safety category (1 through 4) ratings for electrical test equipment and accessories. It was illustrated how important it is to use the right tools for the job. For high energy circuits, Category 4 rated (and tested) equipment

should be used. This is because high energy feeds can provide an ideal path for a transient spike (such as could occur with a lightning strike to an outside power line. The transient can then result in an arc blast. Arc blasts can be disastrous events. They cause more electrical injuries every year than the more familiar hazard of electric shock.

Category 4 circuits are the “origin of installation,” where low-voltage connection is made to utility power. Some examples of category 4 circuits include:

- Electricity meters and primary overcurrent protection equipment
- Outside and service entrance, service drop from pole to building, or the run between revenue metering and panel
- Overhead line to detached building or an underground line to well pump

Although these circuits are not the typical environment of the average metrologist, many of the electrical meters being calibrated today bear these safety category ratings. It can be a lifesaving detail to not let an end user “roll out” to a job with a category 4 meter...but only category 1 test leads.

Our presentations were rounded out with Gus Gustafson. Many of you may have talked with Gus if you’ve ever



Dr. Jun Bautista, Masy BioServices

called the technical support line at Mitutoyo! As part of his work with Mitutoyo, Gus also does teaching and outreach events at technical schools. Today's presentation topic was on the proper use and care of precision hand tools. Gus came prepared with a sampling of hand tools (calipers, micrometers, etc.), in addition to a list of do's, don'ts, and tricks of the trade.

A staple in most manufacturing environments, precision hand tools are everywhere...and their basic care is often overlooked. One important and overlooked aspect is proper storage. Part of proper storage involves setting the instrument so that you are leaving an air gap between the measuring faces. This simple step can prevent corrosion on the critical surfaces. A little care and consideration of these precision hand tools bears fruit in reliable and repeatable measurements. It also increases the likelihood they'll still be in tolerance when they came back for calibration. But knowing some of the rigors that hand tools face in the field was enlightening and informative from the calibration provider's prospective.

At the day's end, a tour of the newly expanded Masy BioServices facility was made available to the attendees. This was our second meeting at this facility, so members who were at both meetings got to see the "before and after" of the impressive renovations and new construction.

We thank our host, and all the presenters, for what was a very interesting and informative day to the over 25 industry professionals in attendance. Our next regional meeting is being planned for October 12 in Southbridge, MA (home of the Optical Heritage Museum).



Gus Gustafson, Mitutoyo