

# THE PULSE

A large, black, stylized arrow graphic that starts under the letter 'E' and points to the right, ending under the letter 'E'.

Newsletter  
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# Insight

from Jon



In my short time with Tolteq as account manager, I've already had the privilege of spending time out on a few rigs during field testing for our new Top Mount Pulser (TMP). Although I've had many interesting experiences in my career, the oil field is unlike anything I have ever seen.

First, I learned that time works a bit differently at the rig. I don't stress as much about packing for the first targeted test date. It usually takes several attempts before the timing works out just right. However, when they're ready, they're ready and you'd better be packed and on the road.

Prior to being on a rig, I had never heard a person use a particular word that we can't mention in this publication as a noun, verb and adjective—all in the same sentence! That is some serious linguistic skill, and it comes from years of practice. I have a lot of catching up to do.

I have also met some amazing story tellers. We listened to a particular directional driller tell us very colorful stories from his 10+ year career in the oil field. He kept us entertained for hours and had us repeating his stories for weeks (sometimes with language adjustments based on the audience).

I saw an MWD hand eat a sandwich with hands that were not just dirty, but completely black. It looked like he had been playing with coal! He said he didn't have time to wash his hands. At least he could have held the sandwich with the packaging, but I guess he didn't have time for that either. I also learned that some oil field pick-up trucks have accelerator pedals that only have two positions: at rest or touching the floorboard.

In addition to the culture shock and funny stories, I picked up some serious things. We have many customers who are amazingly helpful in giving us opportunities to field test new products—not just giving us a shot, but bending over backwards to help us be successful.

I have seen small teams and individuals that don't know the phrase give-up do everything they can to keep their tools running in order to make their company successful. I have seen guys stay amazingly calm in situations where most people would have already run-off to hide behind a trailer.

I have been blown away each time by the hospitality shown to "outsiders" who by our presence are making their working lives harder. My biggest insight, however, is seeing so many people who are passionate about their jobs—really hard jobs—and who pursue excellence every day.

Jon Weatherly  
Account Manager

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# Calibration

## Everything You Need to Know

**The sensor pack is one of the most critical pieces of the MWD system and is responsible for taking the gravitational and magnetic field readings that are used to determine the position and direction of the tool string downhole. The sensor consists of accelerometers, magnetometers and associated electronics that, through wear and tear in the harsh downhole environment, can lose their accuracy.**

### What is calibration?

In general, calibration involves measuring an unknown against a known. Multiple readings are taken at predetermined positions using sophisticated non-magnetic stands in a controlled, non-ferrous environment. It's an involved process that requires the full attention of the technician. At the end of the process, new coefficients are provided to the customer in a portable drive or flashed to reprogrammable sensor packs (with a few exceptions).

Directional sensor pack is secured inside oven

### Why is it important to calibrate my directional sensor?

Calibration ensures that a sensor pack will operate within an acceptable degree of accuracy in the downhole environment. The exact number and type of sensors vary from vendor to vendor, however this is not of consequence to the calibration process since all sensor packs report gravity and magnetic readings on the X, Y and Z axis. As a result, we service all GE/Tensor compatible directional sensors.

Stand is rotated over 500 times in multiple directions during the entire process

### How do I know if my sensor pack needs calibrating?

If and when your directional sensor begins to deliver atypical data and fails your own shop roll test, then it is probably a good idea to send it to Tolteq. We will administer a preliminary lab-controlled roll test to verify if the sensor pack does in fact require calibration.

### What are the steps involved in calibration?

Prior to going through all the steps, the sensor pack is roll tested at room temperature to determine its degree of accuracy. If it fails, the sensor pack is calibrated at room temperature, then to its maximum rated temperature, in increments of 25 °C. Then, it is returned to room temperature, again in increments of 25 °C. At the end of the eight-hour process, the thermal cycle test results are generated (pass or fail), in addition to the corrected coefficients.

### What is the turn-around time to get my sensor back?

The average turn-around time for a sensor calibration is under ten days, although there may be unique circumstances that can shorten or lengthen your calibration. Nevertheless, our turn-around time is significantly faster than the industry standard 3-6 month wait. For more information on how we can best meet your needs, please do not hesitate to contact your account manager.



# meet the innovators

In the first of a regular installment, we chat with the individuals who are helping to shape the MWD landscape through their contributions at Tolteq.

**"I came to Tolteq because of the challenge.** I was tasked with building a development environment as well as a great team of software engineers. An agile workflow was the way to go. It allows us to evaluate our products as we simultaneously develop. If something doesn't fit the bill, we address the issue and make immediate changes. We don't sit around and over-analyze the situation. This is vital if you want to survive in this new business climate.

**"Hey, that was my idea!** I designed a multi-player strategy game based on Xiangqi, or Chinese chess, when I was twelve. It became quite popular in my school. Two years later, I saw an identical version of the game featured in the local paper. That was a hard lesson: never dismiss the impact your ideas may have on other people.

**Energy has always fascinated me, even as a teenager.** For our school science society, I designed a hydro-powered generator that relied on gravity and water. It actually produced real power. Our world is amazing, and can yield energy in so many ways. Who knew that shale could store that much hydrocarbon?

**I saw computers as a gateway to a better life.** I learned to program in middle school. After three years, I ran the school computer club for the teacher and instructed my classmates in BASIC. I guess even back then I was managing software projects—it must be in my blood!

**There is a world of talented people out there—the smart companies are investing in them.** In college, I specialized in robotic vision and artificial intelligence (A.I.). At that time, Apple sponsored a program in our school to develop video technology for their IIGS computer line. Nowadays, most laptops include an integrated video camera.

**I don't do well in a rules-heavy environment—I think it stifles innovation.** During my military stint, I was assigned to a top secret project that involved A.I. I enjoyed the work, but all the formality and saluting just wasn't for me. I left as soon as my service was up, even though they wanted me to stay. The best companies, like Tolteq, strike a good balance when it comes to fostering a creative environment.

**Software applications are like fingers, but the framework behind them is the palm of the hand.** We are building an amazing framework that will unify all of our software. We mean it when we say that we are 'transforming downhole data into downhole intelligence.' Our clients will love it, but I can't say more than that!"



## Andrew Chen Software Architect/IT Manager

This Singapore native, who at one time specialized in robotics and A.I. in his former country, now lends his vision to MWD-related software. He discusses his formative years as well as his current role at Tolteq.

# Tolteq Makes the Inc. 500

For the second year in a row, Inc. magazine has ranked Tolteq in its annual Inc. 500 | 5000, an exclusive ranking of the nation's fastest-growing private companies.

Tolteq has experienced 1,385 percent growth from 2009 to 2012 and added 39 new team members, placing the company at No. 311 on the prestigious list. The Inc. 500 | 5000 represents the most comprehensive look at the most important segment of the economy – America's independent entrepreneurs. Tolteq's unique approach to engineering MWD systems and components has transformed downhole data into downhole intelligence, elevating its reputation from a regional provider to a global enterprise.

"Each year Tolteq continues to make strides as a premier provider of MWD systems and components. To receive recognition, on the Inc. 500 | 5000, for the second year in a row is a honor and we look forward to continued growth in our industry by constantly innovating and introducing newly engineered solutions to the MWD market," stated Paul Deere, President and Founder of Tolteq.

The 2013 Inc. 500 | 5000, unveiled in the September issue of Inc. (available on newsstands August 20 to November 20 and on Inc.com), is the most competitive crop in the list's history. To make the cut, companies had to have achieved a staggering minimum of 918.59 percent in sales growth.

The Inc. 500's aggregate revenue is \$14.1 billion, with a median three-year growth of 1739 percent. The companies on this year's Inc. 500 employ more than 52,100 people and, in the past three years, have generated over 44,912 jobs.

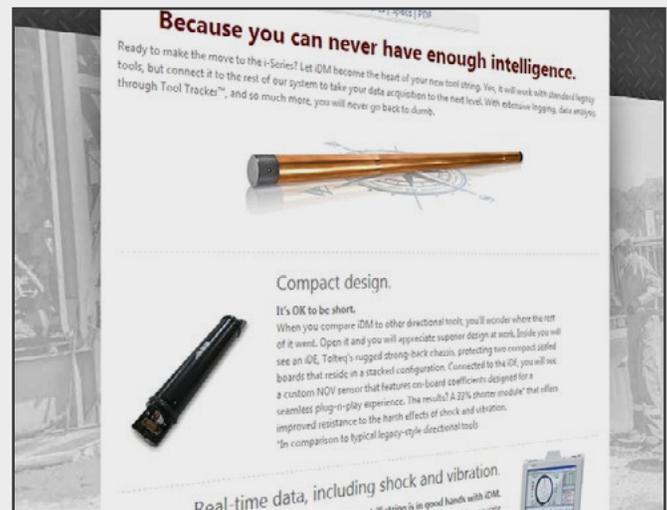
Complete results of the Inc. 500 | 5000, including company profiles and an interactive database that can be sorted by industry, region, and other criteria, can be found at [www.inc.com/500](http://www.inc.com/500).

## Coming Soon: All-New Website

Our current website has served us well, but like the rest of us, is starting to show its age. In an effort to best meet the needs of our customers and our growing company, we will be unveiling a completely new website that kicks-off our rebranding effort. If you like the look and feel of *The Pulse*, then you will love our new virtual home.

New additions will include:

- An in-depth Company page featuring our leadership team, our history, and our company pillars
- A News page with an archive for press releases, newsletters, and media articles
- A Careers page with a listing of current job openings, as well as a convenient area for uploading your personal information and resume



We're also excited to provide you with the detailed product information that you've asked for:

- Large, high-res images of all of our MWD tools and equipment
- An in-depth Features page for every product with accompanying images
- New data sheets that replicate our rebranded look and feel

Now more than ever, the new [Tolteq.com](http://Tolteq.com) will make it clear why our innovative products are being adopted worldwide. Look for it in September!

## UPCOMING RELEASES

9/4 ▶ [iSDU Firmware Version 4.20 Update](#)