Made in China

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One wintery weekend I worked with a delivery guy trying to get our new, very large and comfortable leather sofa into the house. You guessed it – we could not get it to fit through the front door. We resorted to the huff and puff up over the first floor balcony and in through the sliding door. As I stood at ground level with the sofa delicately balanced above my head ready to drag up and over the balcony edge, I noticed a very small white sticker on the underside of the sofa in a position seldom, if ever seen. The sticker read Made in China.

This sticker was stuck on our top of the range sofa. It is very large and more importantly a very comfortable sofa, not to mention well made. It took three of us to manhandle it into the house.

Although we prefer not to admit it, a majority of the items we purchase now are made in China. These being the products and brands we have known for many years, which have proved over time to be reliable and of good quality. Because the companies manufacturing these items are commercial businesses, they have had to maintain their competitiveness worldwide and many manufacturers have moved their manufacturing to China in recent years.

The reasons for this are clear. China can provide a highly educated workforce which is motivated, flexible and committed. With a huge pool of workers to choose from, combined with lower wages by international standards China is appealing for large manufacturing companies. In our modern global economy stimulated by the internet and fast, affordable freight and courier services, moving products from one country to another is a breeze.

Low cost, high value

Even though many of the items we buy on a regular basis in New Zealand are made in China, there is still strong stigma in New Zealand against these products. We are often blissfully unaware of where the product has been made. When we purchase something often we choose a brand we are familiar with and seldom question where the product was manufactured.

I recall strong branding on television in the 1980s pushing us to purchase New Zealand made to keep New Zealand working. Roll the clock forward to 2012 and unless an item is food related, products labelled made in New Zealand are rare unless you are in a souvenir shop.

Far from sofas and souvenirs, survey equipment is more interesting and technically much more challenging. Like so many of the other products we buy on a regular basis, survey equipment, is now mostly made in China.

Even surveyors can now benefit from low cost high value manufacturing in China. With workloads at an all time low and professional hourly rates for survey work pitched at highly competitive rates, it can be difficult for survey businesses in New Zealand to make ends meet at the moment. This as apart from budgeting for the upgrade and replacement of obsolete and outdated survey equipment. In order to provide a prompt and competitive survey service to our clients it is more important than ever to be using the latest survey equipment available.

Range of manufacturers

There are several large manufacturers of survey equipment that originate from China. Some of the established manufacturers started more than 20 years ago in China so have considerable experience.

The manufacturers in China have all followed a development path similar to the Japanese survey equipment manufacturers. They started out at grass roots level producing survey accessories such as tripods and prisms. Over time they progressed into optical instruments such as automatic levels and theodolites, then eventually to total stations and global navigation satellite systems (GNSS).

When developing high end products such as total stations and GNSS, a manufacturer's initial approach would be to copy the previously proven product produced by an international manufacturer. Based upon customer feedback they would then develop their own customised versions of total stations and GNSS.

Most of the manufacturers of GNSS equipment in China purchase original equipment manufacturer GNSS main boards from either Novatel or Pacific Crest. The main board is the most important component of the GNSS receiver. The Chinese manufacturer is licensed to integrate the main board into their own housing, with telemetry and a third party survey controller. Most manufacturers have used the American Carlson software due to its compatibility with all major survey equipment and international preference.

Chinese origin survey equipment

The current manufacturers of Chinese origin survey equipment include SOUTH (who have approximately 60 per cent share of Chinese market and largest range of survey equipment), Hi-Target, CHC, FOIF, and Unistrong. There are several smaller companies who concentrate purely on survey accessories and who may develop higher end products.

Interestingly some other international survey equipment manufacturers have set up manufacturing facilities in China in recent years, such as Geomax which is owned by the Hexagon Group. Many Japanese brands have also invested and started to run their productions in China although some of their high end products are still made in Japan.

Reasons behind Chinese manufacturing

Why is this happening? Price is not the only focus, the following factors are also important.

- China is the biggest consumer of surveying equipment in the world due to the country's huge economic growth and its rapid development of infrastructure. Worldwide survey brands are focussed on this huge market.
- Many major brands have invested in factories in China and hired Chinese workers for assembly jobs. Over and above labour and workshop costs there are other considerable advantages that are appreciated even more. China's scientific expertise and production capabilities have been established through years of experience. Much of this has occurred as a result of relationships extending from foreign investments and joint ventures which have enabled the manufacturing community to extend its knowledge base and improve skills.
- A stable political environment accompanied with very little religious unrest provides an ideal environment for factories to operate at full speed, allowing for mass production without any interruption.

With all this in mind, it is easy to appreciate why so much survey equipment is manufactured in huge volumes in China instead of other countries like India, Indonesia, Thailand and Vietnam etc, where labour and workshop costs are lower than those in China.

Price

Customers looking at purchasing survey equipment made in China are often surprised how low the prices are. Compared to the survey equipment manufactured in the United States Europe or Japan, the prices on high end equipment such as total stations and GNSS are often less than half price.

Buying survey equipment which could potentially save a company tens of thousands of dollars, which also exceeds the technician's expectations, is very appealing. These purchases can ensure that a survey company is using the latest and most advanced equipment to provide a more cost effective, efficient and profitable service to its clients.

The made in China brands will often include additional features and accessories as a standard included in their basic introductory price. A purchaser is therefore clearly gaining more from their expenditure. The manufacturers in the United States, Europe and Japan will sometimes remove additional features and functions from their basic introductory price and put them as optional extras to try to be price competitive.

Affordability

A common perception is that if the price is low then the quality of the equipment must be questionable. This is not the case with survey equipment manufactured in China. Chinese manufacturers all follow strict quality assurance procedures and conform to international ISO certification.

The cost of components is kept to a minimum by numbers and scale. For example, the manufacture of over 20,000 total stations or GNSS each year allows the cost per component to be considerably lower than a production of only 1,000 units a year. This, combined with the lower business overheads compared to the United States, Europe or Japan, creates a market of considerably more affordable survey equipment. Continuous research and development to refine and improve existing products is a focus in order to develop new products which meet end user requirements.

Local support

The best survey product in the world could be a complete failure without timely and reliable local technical support. Having someone to email or telephone that speaks the same language and is in the same time zone is essential for effective support. For service, calibration or repair work having a New Zealand based office is critical.

In the past there have been a handful of cases where people have purchased survey equipment direct from a manufacturer in China where no training and little support was provided. This could have given Chinese equipment a bad name but fortunately the situation is changing.

In the last year or so local distributors have been established for a couple of the made in China brands in New Zealand. Provided the distributors are qualified and experienced at supplying and supporting the survey equipment being imported, then the above bad publicity should not be repeated. A good supplier will be able

to demonstrate the equipment a company is interested in purchasing, at a hands on practical session.

Trialling and training

The ability to test equipment on actual surveys and projects using company staff is a far more reliable method of proving the accuracy and suitability of the equipment. If a company can afford the time, this is a great method to prove beyond doubt, the survey equipment's suitability and the support capabilities of the supplier. Training is also important to make sure the equipment is operated by the recommended procedures and the benefits of using the equipment are realised specifically for the surveys intended.

Survey equipment should come with a 12 month manufacturer's warranty. In the unlikely event of instrument damage or failure during ownership, it is important that the supplier has backup equipment available to lend the company to ensure that survey operations continue while repair work is carried out. Ideally when undertaking warranty work, the supplier should provide a loan instrument free of charge. It is essential that the supplier has the facilities to service and calibrate equipment.

The future

Unfortunately my crystal ball broke three years ago, along with everyone elses when the recession took hold. Times have certainly changed and it has never been a better time to think outside the box and try something different.

It is inevitable that more and more survey equipment made in China will appear in the work place in New Zealand over the next few years.

The reason for this is simple. The cost to benefit ratio of the made in China brands is unrivalled.

I envisage there will be a continual increase in the product range available. Significant and continuous research and development is being undertaken to develop new products and to refine existing products which better meet end user requirements.

Longevity

A frequently asked question about equipment made in China is, how many years is the survey equipment likely to last? Like most survey equipment available, with good care and maintenance a life span of a decade or more is not unrealistic. Worldwide, survey equipment technology is developing very quickly. It is likely that within a three to five year period of owning a total station or GNSS the equipment would be superseded by a far superior model which would render the older equipment non-productive. At that point upgrading or replacement would need to be considered.

The New Zealand geospatial market using GNSS is of national importance. Yet it surprises me to still see some survey companies in New Zealand not owning or using GNSS on surveys. Cost may be one factor which has slowed the adoption of GNSS in New Zealand. Having an affordable survey solution may help correct this situation.

Opportunities abound

In 2007 Land Information New Zealand (LINZ) on behalf of several government departments, undertook a study and outlined the geospatial strategy for the future. The study highlights the fact that geospatial information is one of the critical elements underpinning decision making for many disciplines. Further details on this can be found at www.linz.govt.nz/geospatial-office/geospatial-strategy.

In 2009 a report was commissioned by LINZ on the economic issues regarding conversion of its precision reference network to real time status, nowadays referred to as PositioNZ-RT. Further details on this can be found at www.linz.govt.nz/docs/surveysystem/geodetic/cors-upgrade-economics-report.pdf. The report highlights that data will be provided free of charge and in real time to all users, with positional accuracies of one to three centimetres and one second latencies.

The taxpayer funded GNSS real time corrections service PositioNZ-RT, available free of charge, can be accessed with any GNSS receiver provided it has a global system for mobile communications (GSM) modem and mobile phone coverage for work area. A GSM modem uses a subscriber identification module (SIM) card and requires a subscription or pay as you go service from a mobile phone service provider and uses general packet radio service data only making it very cost effective and economical. The GNSS correction service is available nationwide and access details are available at http://apps.linz.govt.nz/positionz/rt/index.php. The GNSS correction service is considered to contribute to producing substantial national, social and economic benefits, hence its free use status.

The advantage of using a GNSS correction service is a survey team only requires a rover GNSS receiver to carry out a survey. The survey company therefore saves considerable money in not having to purchase a second GNSS receiver for a base station. The surveys are also completed in less time as the survey party does not have to setup a base station and deal with the security or theft issues involved with leaving a base station unattended.

It is essential in these tough economic times that survey companies undertake a careful appraisal of the specific needs and requirements when it comes to equipment. When needs and requirements are paired with the latest appropriate survey equipment, and the uptake of the latest services such as PositioNZ-RT, a survey company will benefit from being able to provide a timely and competitive survey service.

It may have been more appropriate to have the title for this article as Assembled in China. Referring to the survey manufacturing community, some components are made overseas and then imported to China for the final step, assembly, but under foreign management and supervision. Just take a look at the back of your iPhone or iPad. It will something similar to – Designed by Apple in California, Assembled in China. This leads us to the totally new concept that many products in our modern age are designed, made and brought to life by the world's collective intelligence and wisdom, then assembled and finally finished in China.

Allan Hosking obtained a BSurv from Otago University, graduating in 1989. A further three years work experience with RPC Ltd in Whakatane lead to registration as a professional surveyor in 1993. Allan began his overseas experience in 1993. In 2006 he began his own survey company and operated this in England for four years. In 2010 Allan relocated to Tauranga where he operates his business Survey Solutions and is a supplier of the Chinese manufactured SOUTH brand of survey equipment.