



## Customer Testimonial

### About Xinxiang Zhongke Science & Technology Co. Ltd

Xinxiang Zhongke Science & Technology Co. Ltd. specialize in the development and sales of lithium ion (LIB) battery components and medium to large format LIB batteries. Its product portfolio includes core battery components, including micro-porous separator film, battery chemicals, plus prismatic, cylindrical and polymer batteries.

Zhongke develops and manufactures LIB materials and strives for excellence through leading-edge technologies. By doing this, Zhongke is able to maintain market leadership and provide its customers with advanced, durable, quality products.

### NDC's FG710S: The only sensor able to measure the true thickness of micro-porous LIB separator film

*"Our conclusion is that only NDC's FG710S infrared sensor can accurately measure the actual thickness of our lithium ion battery micro-porous films. This unique solution surpasses anything else in the business"*

Mr. Pang Jinsen, General Manager, Xinxiang Zhongke Science & Technology Co. Ltd.

#### The Challenge: To Produce Uniform LIB Separator Film Thickness

Zhongke decided that it needed to accurately measure and control the thickness of their LIB film in order to deliver top quality products from its three lines. LIB film thickness is important because if the film is too thin or porous, then a battery will discharge quickly with the risk of overheating or worse, catching fire. If the film is too thick, then a battery will underperform. Zhongke's program involved evaluating three very different measurement technologies to determine the best solution for measuring the thickness of their LIB separator films. Their objective was to select a high-technology gauging supplier to measure and control the thickness of their separator films and help improve battery quality in terms of safety and performance.

#### Thickness or Weight Measurement?

Zhongke purchased and evaluated web gauging equipment from three different companies, each with distinctly different measurement technologies. NDC supplied its unique infrared FG710S direct thickness sensor, while the other two companies delivered their transmission x-ray and beta sensor technologies. Direct thickness measurement is especially important for



Zhongke Science and Technology Headquarters



The Contract Signing Ceremony at Xinxiang Zhongke for their recent NDC System\*  
2010/09/2



NDC's FG710S Infrared Sensor measuring the true thickness of LIB separator film



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## NDC's Accurate Thickness Measurement and APC Control Help Zhongke Produce High Quality LIB Separator Film on all their Lines

micro-porous film products, as any non-uniform stretching on the line can produce micro-porous "gradients" resulting in thickness and density variations.

During the evaluation process, Zhongke concluded that the x-ray and beta sensors could only measure the total mass of their LIB films and not the thickness. This was because the micro-pores within the film structure resulted in film thickness variations that these traditional technologies were unable to detect.

### The Solution: FG710S Unique Thickness Measurement

What is unique about the FG710S is its ability to compute the true thickness of LIB film by measuring both the transmitted light passing through the film and the light scattered by the micro-pores using specific near infrared wavelengths. The FG710S combines these two values, together with its patented optical engine and powerful sensor algorithms to provide fast, accurate thickness measurement for micro-porous films. This has translated into distinct quality and production improvements for Zhongke's LIB film.

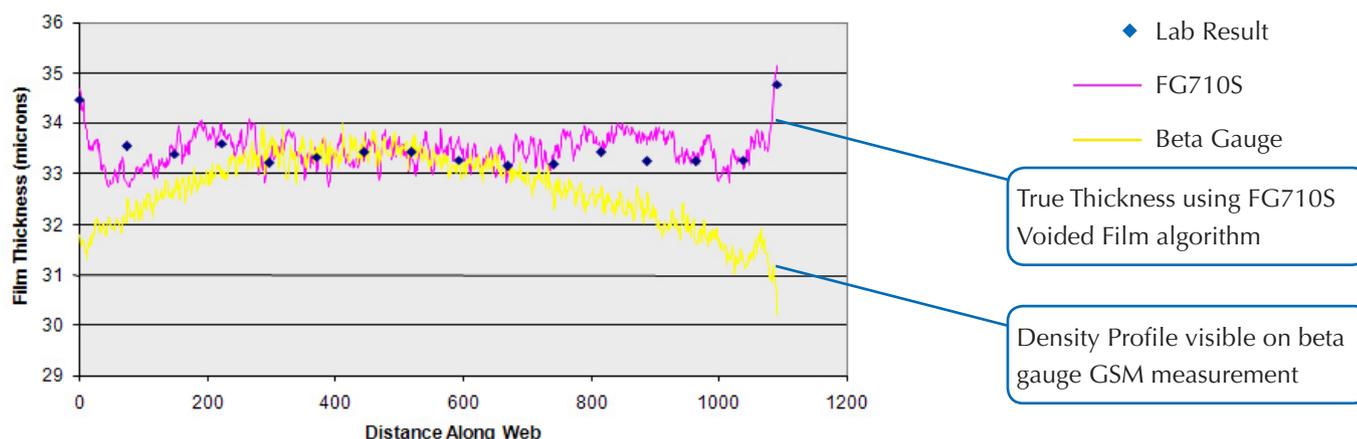
### Delivering the Results: Advanced Profile Control

In addition, Zhongke were impressed with NDC's automatic profile control (APC). The combination of accurate thickness measurement plus APC control has provided far more stable control resulting in flatter, more uniform film. As a result, Zhongke has now standardized on NDC's web gauging systems for its other LIB film separator lines.

*\* Pictured L-R: Mr E Dong GM NDC China; Ms Wang Xiangdong, Technical VP; Mr Craig Wolf, Sales Manager NDC USA; Mr. Pang Jinsen General Manager; Mr. Yang, Project Manager; Mr. Li, Purchasing Manager*

### FG710S Performance

The FG710S on-line thickness measurement achieves close thickness profile correlation on micro-porous film compared to the off-line laboratory instrument and far superior results to a beta gauge on the same product, as shown below



NDC is represented in over 60 countries worldwide

a spectris company



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