

**English Version****Linde LienHwa sees a prosperous prospect in Taiwan semiconductor market  
Through continuing investment to satisfy gases needs from the industry**

2018/09/06 – DIGITIMES (Jay Liu)

Linde LienHwa (LLH), the leading supplier of gases and chemicals to the electronics industry, has been devoting much efforts towards the Taiwan market for long – That is, it has been making good progress together with Taiwan semiconductor industry, and has built up firm relationships with manufacturers in Taiwan. Recently, the fast global development of technologies has led to many applications, such as big data, AI and high-performance computing. This has made the needs of chip market and specifications continuously enhanced. Linde LienHwa thought this trend increased the difficulties and complications of semiconductor processes, and the industry required higher quality on the gases. As such, gas manufacturers absolutely need to invest continuously, and optimize the quality of products and services.

Anshul Sarda, Vice President of Electronic Materials at The Linde Group, pointed out that the producing progress of chips becomes harder and harder, and there's a trend these days towards a much wider application of chips. This led to higher requirements for gases purity and recipe accuracy from the semiconductor industry, and more demands for customized chips. Linde LienHwa has not only developing new products but also making a large capital investment in quality test and analysis. So as to know more about customers' demand and enhance the degree of reliability in the products, building up long-term trust between clients and Linde LienHwa.

As for the product plan, Linde LienHwa's electronic material brand, SPECTRA EM, has rolled out four new products and plans to launch 5 products in order to enhance the diversity of the portfolio. Among this, the fluorine gas mixtures and HBr are Linde LienHwa's focuses in these days. Fluorine is a highly reactive gas and it is combined into a 20% blend with nitrogen to yield a mixture that is safe for compression, packaging and transport; it can also be used to clean the semiconductor manufacturing equipment. HBr is a compressed gas that is used as a selective etchant, allowing semiconductor manufacturers to remove one material while leaving a second material untouched. This process has become increasingly important as leading-edge chip manufacturers produce 3D structures to make transistors smaller, faster

and use less power.

Besides, Anshul Sarda emphasized that in addition to product itself, other services also need continuous improvement. The strengths of Linde LienHwa should be building up from its products and services at the same time. "In order to ensure the quality of gas recipe, Linde LienHwa has devoted a lot of efforts on forensic analysis of the products. Aside from assisting in gas product development, what's more important is to support client at any time, and provide consultancy and analysis on semiconductor gas processing system," said Carl Jackson, Head of Electronics at Linde's Technology and Innovation Group. He also pointed out, electric material industry is closely related to client's performance. Through close and effective cooperation to help clients to grow, it will directly benefit the company's future. At the same time, it can increase brand awareness and expand the scope of services.

Jason Chow, President of UIGC, an LLH's affiliate company, said that they will accelerate digital management in the following year, foster interactive reaction and the speed of problem solving, improve Logistics transportation system and enhance general service safety and reliability.

### Chinese Version (Original)

## 聯華林德看好台灣半導體市場前景 在台灣持續投資滿足產業氣體需求

2018/09/06 - DIGITIMES 劉憲杰 / 台北

電子氣體供應商聯華林德在台灣已深耕多年，可以說是從頭跟著台灣半導體產業一路成長至今，與許多台灣業者早已建立了堅實的合作關係。而隨著近年全球科技的高速演進，帶來大數據、AI 及高速運算等高階應用，使得晶片的市場需求及技術規格也不斷跟著提升，聯華林德認為，這樣的浪潮提高了半導體製程的難度與複雜度，產業對於生產用的氣體，要求也將越來越高，因此氣體廠商絕對有必要持續投資，精進產品內容及服務品質。

聯華林德電子材料副總裁 Anshul Sarda 指出，現在晶片的製程不僅難度增加，應用範圍也越來越大，這使得半導體在生產氣體的要求上，除了更高的純度、更精確的配方比例，針對特定晶片類型的客製化需求也增加了。對此聯華林德不僅持續開發新品，在品質檢測及分析也投入了大量資本，為的就是能夠更清楚了解客戶需求，提高產品可靠度，建立與客戶之間的信任關係。

就產品的計畫來看，聯華林德的電子材料品牌 SPECTRA EM，今年已經新增 4 款新品，明年計劃會推出 5 項，希望進一步強化產品組合的多元性。其中，氟氣混合氣體及溴化氫是近期聯華林德關注的焦點，氟氣是一種高活性氣體，它與 20% 的氮氣混合後會產生可用於安全壓縮、包裝和運輸的混合氣體，可用於清潔半導體製造設備。而溴化氫是一種作用於選擇性蝕刻劑的壓縮氣體，可以在不影響其他材料物質的情況下，針對單一材料物質進行去除，這項材料未來在 3D 結構晶片的製程上，將會扮演重要角色。

但 Anshul Sarda 也強調，除了產品本身，其他的服務也需要持續精進，聯華林德的競爭優勢必須從產品與服務雙軌同時建立。聯華林德電子技術及創新研發總監 Carl Jackson 就表示，為了確保氣體配方的品質，聯華林德在產品的鑑識分析上投入相當大的功夫，除了協助自家的氣體產品開發，更重要的是能夠隨時協助客戶，在半導體製程的氣體使用上提供諮詢與分析。Carl Jackson 指出，電子材料產業與客戶的表現關係密切，透過緊密且有效的合作，持續協助客戶成長，自然對公司的發展有直接的幫助，同時也能打響自己的品牌，擴大服務範圍。

聯華林德集團旗下聯亞科技總經理周祖菴也表示，明年集團將會加速導入數位化管理，加快與客戶之間的互動反應及問題排除的速度，並持續改善物流運輸系統，提高整體服務的安全性及可靠性。