國立台灣大學技術行銷表

台大案號: 06A-100120 (由產學組填寫)

產學合作中心聯絡人：　　電話：　　e-mail：

產品/技術名稱	潔淨氣密容器盒門閂鎖機構
發明人/單位	陳達仁/機械工程研究所
產品/技術說明	一種閂鎖機構，特別指可應用於光電與半導體基板、或晶圓等產品之載卸、傳輸、儲放與運送之潔淨氣密容器盒之盒門閂鎖與氣密等功能之用。此機構的輸出桿先將容器盒門閂鎖，接著改變機構運動方向與功能，將容器盒緊密緊鎖，大幅減少機構桿件數與機構桿件間之作動相互摩擦點數與面積，降低自身產生微粒粉塵的數目與機會，並能有效產生氣密，防止外來的微粒或有害氣體侵入汙染容器內容物，高度確保基板、或晶圓等載卸、傳輸、儲放與運送過程中的安全與可靠。
應用範圍	半導體及光電廠等需微潔淨製程環境(mini-environment)，作為基板、或晶圓等載卸、傳輸、儲放與運送之潔淨氣密容器盒之閂鎖機構。
產品/技術優勢	超高潔淨度(class 10 or better)v.s.(class 100 or better) 可靠度高(MCBF≧80,000 cycles) v.s.(MCBF≧50,000 cycles) 氣密效果(≧24 hrs @ Rh 0.0%~90% atomosphere) v.s.(8 hrs @ Rh 0.0%~90% atomosphere)；*紅色標示為市售產品規格或水準*
市場潛力	潔淨氣密容器是現今要求高潔淨度的製程環境的光電半導體產品製作時必要的載具，更是12吋晶圓廠或是未來18吋晶圓SEMI標準所規範。以一座12吋晶圓廠為例，約需5000個前開式晶圓盒(FOUP, Front Opening Unified Pod) ，以目前一個FOUP售價約NT20,000，其初期投資額至少約為1億元，前開式晶圓運輸盒(FOSB, Front Opening Shipping Box)所需數目更是數倍於此(依其月產能而定)。上述兩樣產品皆為耗材，每年約有5~10%的維護汰換，隨著晶圓製程線寬愈趨微細，製程環境潔淨度的要求愈嚴苛，新一代容器超潔淨度提升的要求與確保愈形迫切。本項技術的潛力與產業應用性可見一般。台灣目前有18座之12吋晶圓廠，另有8座規劃建置中。台灣與中國大陸為未來18吋晶圓廠主要市場所在。目前12吋FOUP與FOSB供應商皆為國外廠商。
產品/技術 智財權保護方式	（由技轉組填寫）

Marketing Abstract of NTU's Invention Disclosure

NTU's docket no:_____(由技轉室填寫)

TTO contact：　　Tel：　　e-mail：

Title	Airtight Clean Container Latch Mechanism
Inventor (s)	Dar-Zen Cheng etc.
Brief Description	This application is a latching mechanism for airtight clean containers. The mechanism has an output link that first latches the container box shut, and then changes it's motion and function to seals the container air-tight, preventing particles from outside the container from entering and contaminating the substrates or wafers.
Fields of Application	This application relates to opto-electronic and semiconductor substrate/wafer manufacturing technologies, more precisely relates to the container boxes carrying the substrates/wafers. While manufacturing substrates/wafers, it is important to keep the substrates/wafers away from contaminations; therefore the substrates/wafers must stay in a highly clean environment. Yet, instead of keeping the whole room clean of particles, it is easier to create a box with a clean mini-environment. Opto-electronic and semiconductor manufacturing fabs will need container modules that can be latched shut, and then sealed air-tight to prevent particles from entering; moreover they need the latching mechanism itself to not create any particles. In existing designs, the latching link usually easily wears off with each other and with container surface, and these particles may seep into the container area and contaminate the substrates/wafers. Moreover, airtight effect and reliability performance also need further enhanced. This application is aimed at these problems.
Advantages	The motion of the output link is designed to have the latching action as a pure horizontal motion, and the sealing action as a pure vertical motion, so that there is less shoveling like motion of the output link on the sealing rubber, which is a particle source. Also, this application may utilize more revolute joints in the mechanism than some other designs, this creates less particles.
Market Potential	Gudeng(TW), E-SUN(TW), Entegris(US), Shin-Etsu(JP), Dainich(JP), SEYANG(KR)
IP Right(s)	(由技轉室填寫)