



國內自主研發感測器 (水質) Indigenously Developed Water Quality Sensors

執行單位：經濟部產業技術司 (工研院)

經濟部產業技術司科技專案委託工研院智慧感測與系統科技中心開發「複合水質感測系統」可同時檢測化學需氧量 (COD)、水中懸浮固體濃度 (SS)、重金屬銅離子 (Cu^{2+}) 濃度、導電度、酸鹼值、溫度等指標。以 UV 光抑菌方式，抑制感測介面生物膜附著與增生速度，避免影響感測器準度，延長感測器清潔週期，搭配水體取樣設計、最佳化電源管理技術，減少人工頻繁維護，達到長效運作效益，已成功應用於工業區、養殖漁業、產線化學鍍槽、金屬電鍍業和垃圾掩埋場等多種場域，提供智慧化廢水排放管理與製程線上監控，滿足低碳管理與減廢需求。

The Ministry of Economic Affairs, Industrial Technology Bureau, has commissioned the Smart Sensing and System Technology Center at the Industrial Technology Research Institute (ITRI) to develop a "Composite Water Quality Sensing System." This system enables simultaneous measurement and detection of parameters such as Chemical Oxygen Demand (COD), Suspended Solid Concentration (SS), Copper Ion (Cu^{2+}) concentration, conductivity, pH value, temperature, and more. Employing UV light sterilization, it inhibits the attachment and growth of biological films on the sensing interface, preventing interference with sensor accuracy and extending the sensor cleaning cycle. With a design incorporating water sampling, optimized power management technology, and reduced reliance on frequent manual maintenance, the system achieves long-term operational efficiency. It has been successfully applied in various settings, including industrial zones, aquaculture, chemical plating lines, metal



electroplating industries, and landfill sites. The system provides intelligent wastewater discharge management and real-time monitoring of processes, meeting the demands of low-carbon management and waste reduction.

【長效性 COD / SS 水質感測模組技術】

https://www.itri.org.tw/ListStyle.aspx?DisplayStyle=01_content&SiteID=1&MmmID=1164152504353117356&MGID=1217776041130755071



長效複合式水質監測系統