

CDR GalvanLab®: the system for meeting the challenges of quality control in the galvanic industry

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Abstract

The surface treatment industry faces increasingly complex analytical challenges, driven by the need to combine excellent quality standards, cost optimization, and sustainability. In this context, CDR GalvanLab® represents an innovative solution: a complete, versatile, and safe analysis system capable of conducting rapid and reliable tests both in the laboratory and directly on the production line. Responding to modern control needs, the system offers users a wide range of advanced analytical applications.

An evolving sector

The galvanic sector is undergoing a profound transformation, driven by the need to drastically reduce production waste (*zero-defect manufacturing*), manage metal price fluctuations and improve the environmental sustainability of processes.

Today's surface treatment market is extremely heterogeneous and serves supply chains that are crucial to the global economy. It ranges from purely aesthetic coatings for high-fashion, jewelry, and designer faucets to high-precision functional plating, where tolerances are minimal, as in the electronics (printed circuit boards and semiconductors), automotive, aerospace, and medical industries.

This transversality brings significant challenges for manufacturers: whether it's a gold bath for a luxury watch or a palladium deposit for an aerospace connector, each matrix presents extremely delicate chemical balances. These must be monitored with extreme rigour to ensure coating adhesion, aesthetic or functional reproducibility, and regulatory compliance of discharges. In this context, the role of analytical instruments is crucial: solutions are needed that allow reliable checks close to the production tanks, reducing waiting times and reliance on external laboratories.

The CDR GalvanLab® solution

To address these needs, CDR has developed **CDR GalvanLab®**, a system for **chemical analysis** compact and versatile, designed to support quality control throughout the entire plating process. Based on a consolidated analytical philosophy, CDR

GalvanLab® introduces simplified **methods and pre-vialed, ready-to-use reagents**, eliminating the need for complex preparations and drastically reducing the use of glassware and the handling of hazardous reagents.

The main advantages:

- **Safety and sustainability:** reduced operator exposure to complex chemicals and reduced laboratory waste production, thanks to the use of micro-quantities of samples.
- **Speed and reliability:** results obtained in a few minutes, correlated with official reference methods and accurate even for complex chemical parameters.
- **Versatility:** applicable to a wide range of matrices, from plating baths to process waters, with a single instrument.
- **Accessibility:** usable directly by line operators or department managers, thanks to intuitive procedures in a few simple steps.
- **Adaptability:** ideal for both large, highly automated industrial centers and for subcontractors and small production facilities.

Applications in different process matrices

Electroplating Baths Baths are the heart of electroplating. To ensure absolute conductivity in telecommunications or the perfect shade of a luxury fashion buckle, maintaining the bath at perfect concentrations is the truly critical factor.

CDR GalvanLab® allows the precise determination of:

- Precious and base metals: Gold, Silver, Rhodium, Copper, Nickel (total and nickel chloride), and Palladium, Nickel and Iron in complex alloy baths (Pd-Fe, Pd-Ni).
- Organic components and chemical balance: Saccharin, Boric Acid, Potash, Sulfuric Acid in rhodium baths and free Cyanides in different types of baths.

Process Water Water is the quietest yet most essential element in any production line. For high-volume production sectors like the automotive or plumbing industries, where water is used extensively, inadequate monitoring translates into huge costs due to defects and rework. With CDR

GalvanLab®, you can monitor key parameters such as:

- Total Organic Carbon (TOC): Essential for detecting contamination or surfactants that cause adhesion problems.
- Chlorides and Sulfates: to monitor harmful build-ups and prevent equipment corrosion.
- Potassium, Cyanide, and Copper: crucial indicators for washing efficiency and safety.

Pollutants Pollutants aren't just external contaminants, but ions that progressively accumulate, imperceptibly altering the structure of the deposit over time. In sectors such as the medical and aerospace industries, or in fine watchmaking, a latent defect that emerges months after assembly causes incalculable damage. CDR GalvanLab® allows for precise control of:

- Copper in Ruthenium baths and Chlorides in acid Copper: parameters whose presence outside the range risks triggering late oxidations or structural fragility once deposition has already occurred.

Precious Metal Recovery Static rinse tanks downstream of high-quality baths accumulate metals through the *drag-out effect*. For jewelry, printed circuit board (PCB) manufacturing, and fashion brands, these liquids are a true corporate asset. CDR GalvanLab® analyzes these solutions for:

- Estimate metal content: quickly and internally determine the exact content to be recovered (Gold, Palladium, Rhodium, etc.), avoiding capital loss and supporting timely decisions before sending to external refining.

A tool for every production reality

Quality control in the galvanic sector isn't the exclusive prerogative of large continuous plants. In structured industrial environments (automotive, electronics), CDR GalvanLab® optimizes workflows and reduces plant downtime; for technical galvanic subcontractors or artisanal businesses, it allows them to obtain reliable analytical data without having to incur the costs of outsourcing to laboratories.

Thanks to pre-filled cuvettes and guided procedures, the system meets the highest operational convenience requirements. In any context, it represents concrete support for:

- Maintain chemical stability of processes.
- Prevent defects and costly rework.

- Optimizing the economic yield of precious metals.
- Ensure compliance of wastewater and water.



Conclusion

In a market where error tolerance is increasingly near zero, the galvanic industry can no longer afford to rely on long waiting times for external laboratories or on retroactive inspections after damage has already occurred. **CDR GalvanLab®** represents the concrete answer to this need for timeliness, safety and precision.

By transferring the reliability and rigor of a chemical laboratory directly to the production line, this system gives companies complete and immediate control over their processes. CDR GalvanLab® transforms quality control from a necessary cost to a truly strategic tool. Preventing defects, optimizing resources, and eliminating downtime means guaranteeing the excellence of the final product, consolidating a competitive advantage in any sector.