

case study

Bespoke process equipment for sustainable recovery of precious metals

The generation of e-waste presents a significant global challenge, leading to the loss of tonnes of precious metals each year due to poor management of this waste product.

Fortunately, there are innovative techniques available that facilitate the recovery of these valuable metals through a clever chemical process.

This process involves several stages that, in the beginning, could only be executed in a laboratory setting on a small scale.

To effectively address this issue, a solution was needed to scale up and automate the process, providing a method for the mass extraction of precious metals from the vast amounts of e-waste piling up in these waste mountains.



CHALLENGES

- No “off the shelf” solution

Products designed for small-scale use with this process were available; however, they were all small, manual, and did not comply with health and safety regulations and standards.

- Timescales

To address the global challenges of e-waste management, a swift solution was essential to ensure financial stability for the business and to capitalize on the available resources.

- Limited third party interest

Due to the intricate and innovative nature of the process, it was difficult to find anyone in the global arena willing to take on such an ambitious project.

APPROACH

- Identify a knowledgeable design partner for industrial process equipment.
- Use design strategies such as Hazard Studies, LOPA, Risk Assessments, and Engineering Compliance Reviews.
- Showcase strong, client-focused project and program management through effective leadership.
- Conduct extensive prototyping trials to find the optimal approach.
- Apply project management methodologies to ensure quality, budget, and timeline compliance.

RESULTS

- **Processes with Synergy**

With four decades of experience in industrial process equipment, we successfully collaborated with current equipment suppliers to expedite designs that facilitate automatic operation, all while maintaining a sense of familiarity with the equipment.

- **Trusted partnerships**

By leveraging the knowledge of the process inventor along with a reliable process automation partner, we swiftly evaluated the market and suggested equipment suitable for this demanding project.

- **Safe Plant Operation**

Thanks to robust design tools, the plant received approval from relevant authorities, confirming its suitability for operation in an upper-tier COMAH site.

- **Proven Effectiveness**

Against all expectations, the plant has recently become operational and is now effectively and consistently extracting valuable metals from e-waste.

CONCLUSION

With a dedication to project and operational excellence, alongside effective compliance management and design optimization techniques, the plant was successfully completed. It provided the quality deliverables outlined in the business case, showcasing our capability to tackle even the most intricate process challenges.