

Our Vision

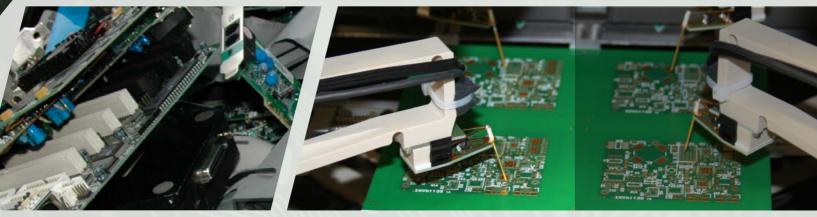
To deliver a stepchange in UK recycling and asset tracking business effectiveness by integrating state of the art technologies from leading industrial and academic organisations into recycling and asset tracking processes.

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Smart Technology for the Internet of Things

Developing On-demand Intelligent Systems and Services for Recycling, Returns and Asset Tracking



- ► Reusable intelligent systems
- Increased business and processes efficiency
- ► Reduced complexity in recycling systems
- Agile scheduling
- Cross supply-chain collaboration



Electronic Components Recycling

Monitoring the Recycling of Assets, Materials and Components at S2S

Our recycling solution monitors assets and processes from receipt of equipment by a reuse organisation up to sale or donation.







RFID enabled workbenches track tagged items. Web services then provide real-time information on goods as they pass through stations such as visual inspection, data erasure, functional testing and PAT testing:

- Traceability of assets
- Assurances that process order is maintained
- Cost analysis support for repair and resale of assets



Improve customer confidence, resale value and your business reputation









The RFID tracking system meets all the requirements of the PAS141 standard. The system also provides useful data and therefore knowledge about your business operation informing and improving decision making

- Each item is uniquely recognised
- ► Each process for the preparation of reuse is monitored
- Data are stored for each process
- Tracking report is generated
- System Rules ensure correct process order is adhered to





ADISA standards

Trakk-it tracking system can be used to track items from collection throughout processing and on to re-sale, recycle or scrap



Consignment and Invoice

All items are recorded both individually and against their original consignment ID an on to final invoice making auditing simpler



Traceability each item has an individually recorded history including consignment, testing, timing, value and processing

How the System Works

Tracking assets through your business







RFID mobile

- RFID Tags remain attached throughout processing for full traceability
- Reusable Fobs Bespoke tag attachment is noninvasive and simply removed making RFID tags reusable
- ▶ RFID Readers installed at work stations processing and product data are recorded to the RFID system database. Mobile reader is in development
- ► Item Identification

 RFID tag links item with IMIE number or serial number logged for future recall
- Database
 Recorded data are input and accessed via a secure web based interface





Tracking items from collection to sale

Future proof your business by progressing towards the Internet of Things, and **SMART** recycling systems.

- Convenience

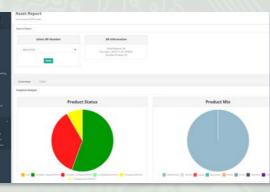
 accessed via a web interface on any device
 capable of loading a web browser
- Cross Platform Compatibility
 HTML and JavaScript ensure the system provides a cross platform interface for data entry and retrieval
- Low Cost Solution
 minimal installation and infrastructure required to
 set up
- Unlike barcodes, RFID tags are not affected by the dirt and dust typical of a warehouse and remain **Readable** throughout handling
- PAS141 compliance and Auditing improvements



Data and User Interface

Reconfigurable, Scalable and Extendable System





HTML and JavaScript for cross platform compatibility

Data are stored in the system database which is extendable and reconfigurable depending on your requirements and processes.

The data are input and accessed via a web based responsive interface.

Fast deployment and ease of use

Reconfigurable

Using route cards and an editable database structure allows acquisition of new data from the tracking system with minimal adjustment

- Responsive Web Design optimises user view across devices of varying screen size
- Familiarity of most users with web based interface minimises training and stress for employees, and maximises adoption of the system

Data

Product Type
Process History
Processing Time
Value
Sales, Scrap, Sold

Consignment Progress

REFERENCES

Communications Software and Systems:

Computer Integrated Manufacturing and Supply Chain

Lugo, H., Segura Velandia, D. M., Conway, P., West, A. Agile Service Oriented Middleware For Intelligent Products (2015) Journal of Communications Software and Systems

Segura Velandia D., Kaur N., Whittow W., Conway, P., West, A. Towards Industrial Internet of Things: Crankshaft Monitoring, Traceability and Tracking Using RFID. (2015) Robotics and Computer Integrated Manufacturing

Segura Velandia D.M., West A.A., Conway P.P. (2011). A database system for decision support in low-volume electronics assembly. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture 225(8): 1411–1430.

Bindel, A, Rosamond, E, Conway, P, West, A, Product Life Cycle Information Management In The Electronics Supply Chain, Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 2012, pp.1– 16

Segura Velandia D.M., West A.A., Monfared R., Conway P.C. (2010). Combining Business Process and Failure Modelling to Increase Yield in Electronics Manufacturing. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture. 225(2): 264–281

Segura Velandia D.M., West A.A. (2008) Case-Based Adaptation for Product Formulation. International Journal of Computer Integrated Manufacturing. 22(6): 524-537 Huertas L. A. M., Conway P.P., Segura Velandia D.M., West A.A. Root cause analysis support for quality improvement in electronics manufacturing. A ssembly Automation 31(1): 38–46

L. K. Philpott, S. Weaver, D. Gordon, P.P. Conway, A. A. West, Assessing Wireless Inertia Measurement Units for Monitoring Athletics Sprint Performance. IEEE Sensors Conference 2014, pp. 2199 – 2202

Lugo, H., Segura Velandia, D. M., Michopoulos, V., Conway, P., West, A. Secure document and asset tracking (2013) Journal of Communications Software and Systems, 9 (1), pp. 24-34

