Feature Summary

The modern assembly plant is brimming with robotic automation, yet such automation can never fully replace the human element of the online assembly process. High product variability and complexity means information driven decisions must be made, and it is people that build cars, not machines. Automating, error-proofing and validating device-driven processes executed by people is a continuous production challenge, and one that demands careful consideration in the planning and execution of build processes.

Core Capabilities

- Automatic tool programming and control driven by proximity of tools to vehicle

- Elimination of the bar code scan by automatic identification of product

- Virtual Poka Yoke with automatic error proofing by location, without mechanical tether

- Automatic recording of tool activity by vehicle for audit and traceability

ZERO DEFECT ASSEMBLY

Flexibility and Control of Handheld Devices

Ubisense Smart Device compels a shift in process design for hand-held devices such as nutrunners and tablets by automating traditionally manual identification tasks and freeing tools from both the tether and the workstation, allowing operators to work quickly, ergonomically and flexibly both in and out of station.

This is achieved through continuous and precise monitoring of tool and vehicle locations as they move and interact with each other along the line. When a tool is brought into a pre-defined spatial zone around the vehicle (like an engine compartment or a side panel), a trigger event transmits both tool and vehicle IDs directly to a listening control system, whether that's a line-side tool controller or the Manufacturing Execution System (MES) controlling the line. This zonal system not only expedites initialization of specific tool settings for the vehicle, but also constrains process execution to the identifying zone, thereby forcing process completion on the right vehicle, in the right location, at the right time, even if the tool is used outside of the originating workstation.
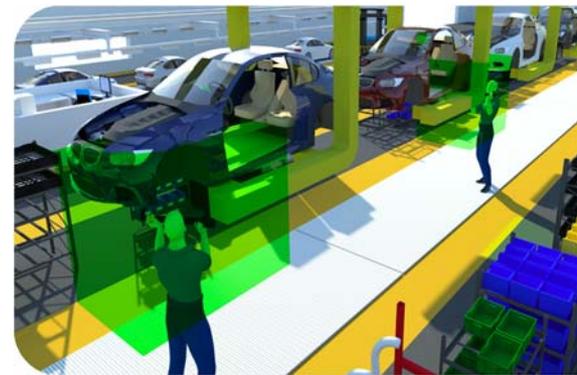
Measurable Time Savings

The result is savings of several seconds per operation for every tool or handheld device related process on the line. The cumulative time saved across daily production volume at all tool stations and across all tasks provides a unique opportunity to refocus line processes and resources. Line rebalancing and resource utilisation can be optimised to increase production volume or to realise significant savings by reducing line length and associated operating costs.
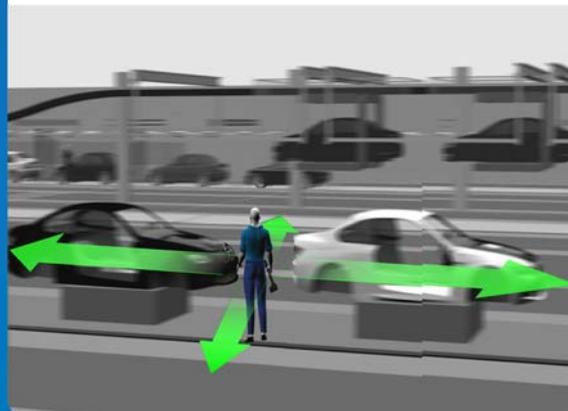
Additionally, knowing the exact location of devices at all times, means not only creating virtual tethers that bind devices to specific workstations, but also creating on-the-fly associations between devices and products anywhere on the line, thereby enabling unmatched levels of freedom to use devices flexibly along a line with zero chance of error.

QUALITY AND TRACEABILITY

Quality assurance is a major driver of productivity and cost reduction on any assembly line. Ensuring product comes off the line fault-free means better throughput and reduced operational effort to get the vehicle tested and verified before sale. Smart Device opens a new chapter on quality assured, fully traceable processes.

Micro Control

Tooling and handheld device driven processes consisting of complex sequences of operations with multiple different tool settings and locations on the vehicle are incredibly difficult to quality assure and even harder to audit and record. With Smart Device, granular zones can be defined around the vehicle so that sequenced tooling operations become error-free and fully traceable. This enables significant increases in tooling process complexity and utilisation by broadening the scope of operations each tool can perform in its assigned workstation.

Macro Control

Knowing exactly where your process-critical devices are at all times means no longer being constrained to a single workstation. Devices can be used flexibly anywhere on the line, enabling specialist operations like quality and rework to flow freely along the line, maximising their utilisation, reducing line stoppages and improving quality KPIs like right-first-time. Higher yield of right-first-time on Assembly also means significant savings in Offline operations, with more vehicles going straight to sales, decreasing Offline resource requirements for rework, increasing daily throughput and reducing order-to-cash cycles.

INTEGRATE AND ACTION

Maximise Productivity and Utilisation

Integration with existing production systems is often essential to realise the benefits of flexible identification along the line. Integration with production systems like tool controllers, PLCs and MES is achieved through Ethernet-based implementations of industrial protocols, with all details of the process interaction being sent to the listening system, which then uses this data to make more informed process control decisions .
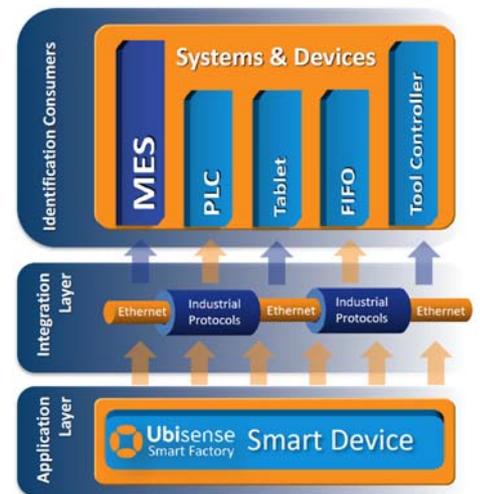
Record and Audit

This information is also critical in making the build process traceable, where the need to maintain the highest standards of quality control means recording the successful completion (or failure) of each and every safety critical task.

Ubisense Smart Device enables massively improved traceability through identification-driven processes, tying human-led activities to the vehicle they are performed on. The result is a detailed story of process-led events including tooling operations, quality inspections, task confirmations and even barcode-driven part verifications for the right vehicle at the right time.

For further information, please contact **enquiries@ubisense.net**.