

Production Flow error-proofing and optimization to reduce 'stuck' Work In Process (WIP), dwell times and rework

Built on the Ubisense precise Real Time Location System (RTLS), Location Driven Process Tracking delivers productivity improvements and error-proofing by real-time monitoring of vehicles as they move through the production workflow.

Automatic detection of out-of-sequence activities and min/max dwell-time exceptions generate immediate alerts for key personnel to enable corrective actions to be taken.

Overview

The application is easily configured to support many manufacturing scenarios. In automotive production, it can be deployed to track vehicles on and off line and through finishing, trim or rework areas, monitoring when they enter and exit designated process steps.

How it works

The location tag can be placed on any item such as vehicles, components, kits, or jigs which are then tracked in real-time to ensure compliance with the defined process rules, enable on-demand status analysis and log historical data for process flow optimisation. Tagged vehicles are typically identified by their Vehicle Identification Number (VIN), which is automatically associated with the unique tag ID.

The workflow view presents a schematic view of the whole facility – typically imported directly from industry standard design packages such as Autocad – with each process bay or work area defined and labelled with an appropriate name; such as 'Wheel alignment', 'Rolling test', or 'Headlamp alignment'. The entry, exit and dwell time are then logged alongside the VIN and process bay identity as vehicles move around the area. Because the system is based on continuous location tracking, work areas can be defined as arbitrary sizes and shapes and easily be moved around enabling a very flexible and complete mapping of the real physical workflow.

Alerts are generated if vehicles move through the area out of sequence – e.g. moving from *paint inspection* to *wet test* before *rolling road* – or when remaining in a step for too long and exceeding the pre-set dwell time threshold.

Because the system is accurate to less than a metre, false associations are avoided even in densely packed work areas. In addition, because the system uses true location tracking, once the infrastructure is installed any reconfiguration of the process area requires only a reconfiguration of the workflow layout map and not the installed hardware.

Key Features

Designed around Ultra-wideband wireless technology, the Ubisense system uses small inexpensive tags to reliably locate and track items with sub-metre accuracy in complex environments where other RFID and wireless technologies fail to deliver.

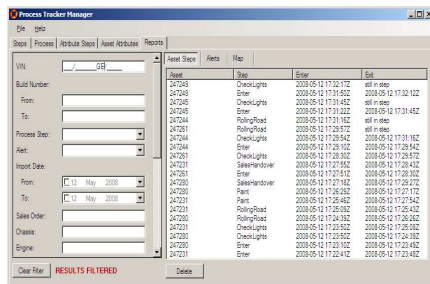
- Workflow dashboard with WIP status & exception alerts
- Simple process rule definition; Sequencing & Dwell time specification
- Automatic notification of process rules violation & user acknowledgment
- Real-time map view of production facility
- Enterprise-wide accessibility; including web-client based
- Integration with standard mgt systems e.g. ERP, FIS, MES, QA
- Interfaces to standard databases for historical reporting and playback
- Search & status query for tagged items e.g. WIP, tools, forklifts, AGV's

"Ubisense has improved the efficiency of our operations and we know that this technology has applications across the aerospace manufacturing, MRO and airports businesses."

Peter Hiscocks, CEO Marshalls Aerospace

The workflow view enables any vehicle to be instantly located by relevant search criteria such as VIN, model type, engine size or dwell time exception level and its current process status obtained. Any vehicle subject to outstanding alerts is quickly located by a simple highlight on the map.

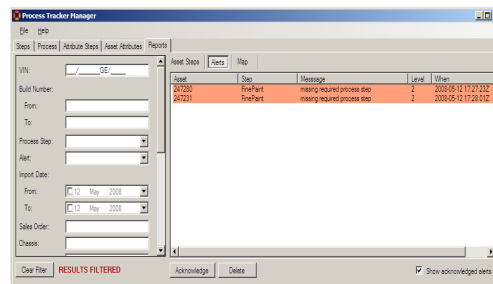
The workflow status and alert views are also available through a simple web based intranet application allowing easy shop floor access even from handheld devices.



Process Step View

Alert	Step	Enter	Exit
247248	CheckLights	2008-05-12 17:32:17Z	still in step
247248	CheckLights	2008-05-12 17:31:02Z	2008-05-12 17:32:17Z
247248	CheckLights	2008-05-12 17:31:02Z	still in step
247249	Enter	2008-05-12 17:31:02Z	2008-05-12 17:31:45Z
247249	RollingRoad	2008-05-12 17:31:19Z	still in step
247249	RollingRoad	2008-05-12 17:29:17Z	still in step
247249	RollingRoad	2008-05-12 17:29:17Z	2008-05-12 17:31:16Z
247249	CheckLights	2008-05-12 17:29:16Z	2008-05-12 17:29:54Z
247249	CheckLights	2008-05-12 17:29:10Z	2008-05-12 17:29:54Z
247249	CheckLights	2008-05-12 17:29:10Z	2008-05-12 17:29:54Z
247251	Enter	2008-05-12 17:27:52Z	2008-05-12 17:28:42Z
247251	WheelHandover	2008-05-12 17:27:51Z	2008-05-12 17:28:10Z
247251	WheelHandover	2008-05-12 17:27:38Z	2008-05-12 17:28:10Z
247251	WheelHandover	2008-05-12 17:27:38Z	2008-05-12 17:27:17Z
247251	Parts	2008-05-12 17:26:28Z	2008-05-12 17:27:17Z
247251	Parts	2008-05-12 17:26:42Z	2008-05-12 17:27:42Z
247251	RollingRoad	2008-05-12 17:26:02Z	2008-05-12 17:26:42Z
247251	RollingRoad	2008-05-12 17:24:39Z	2008-05-12 17:26:02Z
247251	RollingRoad	2008-05-12 17:23:52Z	2008-05-12 17:26:02Z
247251	CheckLights	2008-05-12 17:23:02Z	2008-05-12 17:26:02Z
247251	Enter	2008-05-12 17:21:10Z	2008-05-12 17:26:02Z
247251	Enter	2008-05-12 17:20:41Z	2008-05-12 17:21:42Z

Process Step View



Exception Alert View

Alert	Step	Message	Level	When
247251	FirePart	missing required process step	2	2008-05-12 17:27:32Z
247251	FirePart	missing required process step	2	2008-05-12 17:28:01Z

Exception Alert View

Vehicle Finishing Example

Cars coming off-line into finish and rework become 'stuck', creating unnecessary build up of inventory.

Solution:

- By monitoring dwell times in areas such as rolling road, wheel alignment & paint inspection the system can send alerts over the corporate intranet when dwell time thresholds are exceeded.

Result:

- Cycle time reduction and throughput improvement as cars are always visible throughout finishing.

Motorbike Assembly Example

Component kits built for a specific item of WIP become disassociated due to an unreliable manual system.

Solution:

- By tracking both WIP and kits, the system records the assignment of one with another along with dwell time in each process step along the line.

Result:

- Cycle time reduction and error-proofing deliver increased throughput.

About Ubisense

Ubisense is the world leader in Precise Real Time Location Systems, tracking unlimited numbers of people and objects in any space of any size. With unmatched 15cm 3D tracking accuracy and high reliability, its acclaimed open standards technology platform gives enterprises the power to bring visibility and control to previously intractable business processes. Together Ubisense consulting and its partners, such as IBM, Atlas Copco, Lockheed Martin and Raytheon deliver geospatial and RTLS systems, pioneering innovation whilst reducing costs, gaining competitive advantage and improving safety for companies across all vertical markets. With over 400 customers worldwide including BMW, Caterpillar, DHL, Duke Energy, Deutsche Telekom, US Army; Ubisense is revolutionising industries today. Visit www.ubisense.net

For further information please contact: enquiries@ubisense.net

Worldwide offices

Ubisense UK & Ireland

St Andrews House
90 St Andrews Road
Cambridge CB4 1DL, UK
Tel: +44 (0) 1223 535170

Ubisense Asia Pacific

1 Fullerton Road
02-01 One Fullerton
Singapore 049213
Tel: +65 6472 0186

Ubisense Australia

Level Twelve 200 Queen Street
Melbourne VIC 3000
Australia
Tel: +61 3 8681 0400

Ubisense Europe

ADAC Haus
Freie-Vogel-Str. 393
44269 Dortmund, Germany
Tel: +49 (0) 231 99955 500

Ubisense Korea

Youngdong Tower #902
300-4, Sungsu-Dong 2-GA
Sungdong-Gu
Seoul, 133-120
Korea
Tel: +82 2 529 1472

Ubisense New Zealand

Level 3, 10 O'Connell St
PO Box 6714 Wellesley St
Auckland 1010
New Zealand
Tel: +64 9 304 1048

Ubisense Americas

5445 DTC Parkway, Suite 1110
Denver, CO 80111, USA
Tel: +1 720 249 4149

Ubisense reserves the right to change technical specifications without prior notice.
For the most up to date version of this Data sheet please see www.ubisense.net/en/resources