iTAC Software was founded in 1998 as spin-off of the BOSCH Group. Our focus is on providing a Manufacturing Execution System (MES) solutions for the entire supply chain. We develop, integrate and maintain our internet-based iTAC.MES.Suite for manufacturing enterprises around the globe.

Our headquarters are located in Montabaur Germany with subsidiaries in France, USA and China to ensure international presence and customer proximity.

Our customer base spans a broad industry spectrum from automotive, electronics, automation, energy & utilities, medical technology and telecommunications sectors.
Addressing key market themes

**Platform-Independent Standard Software Suite**
- Platform-agnostic / supports multiple database vendors:
  - Oracle Database, Microsoft SQL Server
- Supports multiple JEE Application Server vendors
  - Oracle GlassFish Server, IBM Websphere
- Standardized connection to ERP and PLM systems
- Highly-scalable, robust platform optimized for large Enterprise deployments
- ARTES Management Center for administration monitoring, supporting IT infrastructure

**Cloud-Based Architecture**
- Proven in a variety of deployment environments:
  - Centralized private cloud
  - Multi-tenant, public cloud
  - On-premise, multi-plant operations
- Maximum security across cloud deployments – suitable for both Enterprise and SMB deployments
- Java development environment based on ARTES middleware to rapidly build and integrate cloud-based applications

**Big Data / Manufacturing & Operational Intelligence**
- Comprehensive BI system for building interactive analytics and production relevant KPIs
- Application support smart phones and tablets (iOS and Android)
- Integration of BI reporting into dashboard
- Partnership with Actuate

**Internet of Things “Smart Factory”**
- Plug-and-play device for API-based, real-time process integration and control
- Converts machines on shop floor into IP-enabled nodes that connect to the MES in the Cloud
- Substantial reduction of the MES-related integration
- M2M communication based on OPC UA as common standard for Industry 4.0
- Secure communication via HTTPS
Technische Entwicklung

BMW Group Standard

GS 95017

2006-10

Klass.-Nr. BWA90

Volkswagen AG

Anforderungen an Lieferanten an die Rückverfolgbarkeit von elektronischen Systemmodulen, Baugruppen und Bauteilen

VW

GS 0013

Entwurf Februar 2007

Anforderungen an Lieferanten an die Rückverfolgbarkeit von elektronischen Systemmodulen, Baugruppen und Bauteilen

Anwendungsbereich

Die VWA90 enthält Bedingungen, die der Rückverfolgbarkeit von Systemmodulen mit elektronischen Baugruppen und elektronischer elektronischen Bauteilen während und nach der Produktion beim Zulieferer eine Leitfunktion zuordnen.

Zwischen den Lieferverträgen und dem Erstellungsplan ist zu sicherstellen, dass die Fertigungsumgebung nachfolgend der technischen Dokumentation entspricht.

Diese Dokumentation und eingesetzte Maßnahmen der Steuerung ist Voraussetzung für eine mangelnde Prüfung in den Rückverfolgungsprozessen. Die gesamten Bedingungen sind in die Produktdokumentation der Steuerungselemente Gebrauch zu machen.

Verfügbarkeit der technischen Lieferbedingungen

Der Lieferant ist für die für ihn gestellten Produkte und Dienstleistungen, entsprechend der Produktionsumschreibung (AUS) im Rahmen der mit Auftragsverträge vereinbarten Leistung verantwortlich.

Die Übereinstimmung der Lieferverträge wird in der Zuliefererprüfung festgestellt.

Technische Lieferbedingung

Entwurf PTL 12245

Porsche

December 2006

Elektrisch / Elektronisch / Steuergeräte

Rückverfolgbarkeit von elektronischen Baugruppen

Verfügbarkeit PTL, welches die Qualitätsmerkmale behandelt.

Die Lieferant ist für die für ihn gestellten Produkte und Dienstleistungen, entsprechend der Produktionsumschreibung (AUS) im Rahmen der mit Auftragsverträge vereinbarten Leistung verantwortlich.

Alle Abweichungen von den Anforderungen dieser PTL, bedürfen der schriftlichen Zustimmung der Porsche AG.

Verfügbarkeit der technischen Lieferbedingungen

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Die Übereinstimmung der Lieferverträge wird in der Zuliefererprüfung festgestellt.

Verfügbarkeit der technischen Lieferbedingungen

FDA

Requirements for the traceability of electronic units

Audi

FDA cGMP, 21 CFR Parts 11 and 820

BMW

GS 95017 - BMW Group Standard

VDA

5005, 6.1.

VW

80131

ISO


Tread Act
Intelligent, end-to-end, cloud-based MES solution

Materials & Logistics
Actual material consumption; full materials synchronization

Computer Aided Quality
Quality analysis and reporting

Add-on Services
Including archiving, alert management

Production Management
Performance analysis, process and machine data collection

Advance Planning & Scheduling
Simultaneously plans and schedules production based on available materials, labor and plant capacity

EMI Dashboards
SCADA-like dashboard of important line data and KPIs

Active Traceability
Real-time product and process traceability for zero ppm

Manufacturing Intelligence
High performance BI portal; analysis of process, business, machine and quality

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MES solution
“the smart factory”
Smart Factory

Key enabler of “Industry 4.0” offering the “Smart Factory” MES solution

Factory Visualization

• Monitor your operation’s performance from anywhere in real-time
Key enabler of “Industry 4.0” offering the “Smart Factory” MES solution

Planning & Control

• Optimize your production schedule & automate the control of your factory

Bottleneck Analyses

- Minimize scheduling time
- Prevent planning errors
- Reduce WIP by 20%-30%
- Increase on-time deliveries by 30%

Gantt Chart Visualization

Resource Utilization
Smart Factory

Key enabler of “Industry 4.0” offering the “Smart Factory” MES solution

Smart Factory Devices

- Realize the Internet of Things (IoT) & Industry 4.0 with smart hardware and bi-directional communication

Standard API (library with approx. 180 functions)

001 activateRecipe
002 activateWorkOrder
018 checkSerialNumberState
127 uploadState

136 verifyMergeProduct

NEW: CustomFunction (<Custom_xyz>…)

API Workflow „Custom_xyz“
Smart Factory

Key enabler of “Industry 4.0” offering the “Smart Factory” MES solution

Big Data & Enterprise Integration

• Seamlessly connect your entire enterprise with one system
Smart Factory

Key enabler of “Industry 4.0” offering the “Smart Factory” MES solution

Compliance & Zero-fault Production

- Comply with industry regulations and automatically ensure that your product is built with zero production defects

Multiple-tier BOM Support/Route Enforcement

“Built As Planned”

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... safeguards your investment
Advantages due to Technology

- 100% JAVA → Platform independent
- 100% web-based → cost efficient for maintenance and administration
- Redundancy for Failure tolerance
- Automatic Online Load balancing
- Automatic Client Re-Connect
- Highly scalable
“investment protection
Key stakeholders”
Future proof your decision

**The Top Management**

- Greater visibility into plant performance, both in real-time and historically using dashboards and BI reporting; helps to drive accountability and identify problem areas (Dashboards, BI Reporting)
- More complete and accurate data on capacity / utilization; inform decisions about how and where to allocate resources - e.g., headcount, capital investment, etc. (BI Reporting)
- Improved traceability and compliance with regulations and standards; provides additional selling point for customers, esp. German (Traceability)
- Reduced product liability due to enablement of zero-fault production and improved ability to recall products and analyze root cause (Traceability)
- Improved product and company reputation, as well as customer satisfaction, due to zero-fault production (Active Traceability with Interlocking)
- Improved customer satisfaction due to greater on-time delivery (Planning & Scheduling, Production Management, Quality Management, Material & Logistics)

**Production**

- Eliminate inconsistency in shop-floor systems and data sources, which will help make the overall operation more efficient (iTAC single platform)
- Enable continuous improvement and more effective at-the-source troubleshooting through use of more robust performance data analysis, using data collected automatically from shop-floor equipment and stations (Production Management, Dashboards, BI Reporting)
- Identify issues and bottlenecks more quickly using real-time alerts and monitoring (Dashboards, Alert Management System)
- Enable zero-fault production by preventing production defects from being introduced into final product (Active Traceability with Interlocking)
- Eliminate waste due to scrap by catching production faults immediately the first time they occur (Active Traceability with Interlocking)
Future proof your decision

Quality

- Eliminate inconsistency in quality data sources, storage points, and formats, which will greatly eliminate waste associated with the collection & analysis of quality data across products, lines, stations, etc. (Quality Management, iTAC Single Platform)
- Enable continuous improvement and more effective at-the-source troubleshooting through use of more robust quality data analysis, using data collected automatically from shop-floor equipment and stations (Quality Management)
- Reduce the burden of tracing production-related defects (Active Traceability with Interlocking)
- Simplify failure analysis (Quality Management)

Planning

- Automatically balance production using sophisticated scheduling algorithms (Advanced Planning & Scheduling)
- Automatically re-plan in response to unforeseen changes in production environment, e.g., staff absence, line outage (Advanced Planning & Scheduling)
- Schedule based on prioritized goals, e.g., on-time delivery, minimized changeovers, full utilization (Advanced Planning & Scheduling)
## Future proof your decision

### Materials
- Provide greater visibility into shop-floor inventory & WIP
- Shorten time required to locate and retrieve material
- Reduce waste due to expired materials by utilizing FIFO handling of parts issued to shop floor
- Reduce waste due to excess inventory by getting more accurate information on shop-floor material quantities and locations, and with real-time backflush to ERP
- Automate material call to speed up delivery of parts to shop floor

### IT
- Decrease system maintenance and administrative burden by consolidating manufacturing systems and data sources into one single platform
- Utilize highly-available, best-in-class technology to provide superior support and performance to the operation
- Future proof your manufacturing systems by adopting a scalable, upgradable commercial product that incorporates the latest technologies and best practices
- Improve the monitoriability of your manufacturing systems with built-in monitoring consoles and plugins for existing monitoring solutions (e.g., Nagios)
- Unleash the power of big data and analytics to provide superior intelligence to the operation and to management
- Realize the vision of the smart factory by intelligently connecting your manufacturing equipment and centrally coordinating their activities
iTAC MES: Summary

• **One Stop Shopping with an Off-the-Shelf Solution**
  – Viable alternative

• **Standard, yet Customizable...Your way...**
  – Standard Software that’s configurable to comply to your unique operational requirements
  – Open architecture enables Customer Creation of own User, Database, and Equipment interfaces

• **MES Growth Path and Sustainability**
  – Consistent investment in innovation...Moving Customer Forward
  – Benefit from developments driven by broad pool of customers

• **One Unified Database Globally** – Customer today may have separate servers/Limited Access not tied together.
  – Accessible by all...Multi-tiered BOM support, automatically driven by ERP system
  – Global Enterprise Solution – connect all sites to common system/database

• **Integration with ERP**
  – Connect ERP directly to point-of-use, complete visibility, control, containment of material...
  – Advanced Scheduling Option – How best to plan next two weeks of production

• **Scalable**
  – Start small and grow(by line-pilot, area-SMT, site, Enterprise), and ala carte Product structure(start with traceability & Quality Mgmt, then add Reporting, Prod. Mgmt, etc)

• **iTAC protect’s your investment**
  – Active Traceability – Built as planned
  – Quality Management – FPY, SPC, CpK, CP, PAA throughout mfg process
  – Production Management – OEE, Productivity to identify bottlenecks, Actual vs Goal
  – Business Intelligence Reporting, Dashboards & Alerts - visibility to current conditions, and customize reports your way for product genealogy, supplier quality, product performance
Thank You!