Software for
Perfection in Production

ERP & MES

PSI

▶ PSIPENTA

Modern. Established. Specialized.

PSI Aktiengesellschaft (AG)
Products and systems in information technology

Specializing in energy, production and infrastructure management
Top 10 German software manufacturer*
> 175 million euro turnover
> 1700 employees worldwide
Customers worldwide
30 locations worldwide (19 international)

*Lünendonk 2014

PSIPENTA Software Systems GmbH

Specializing in production management
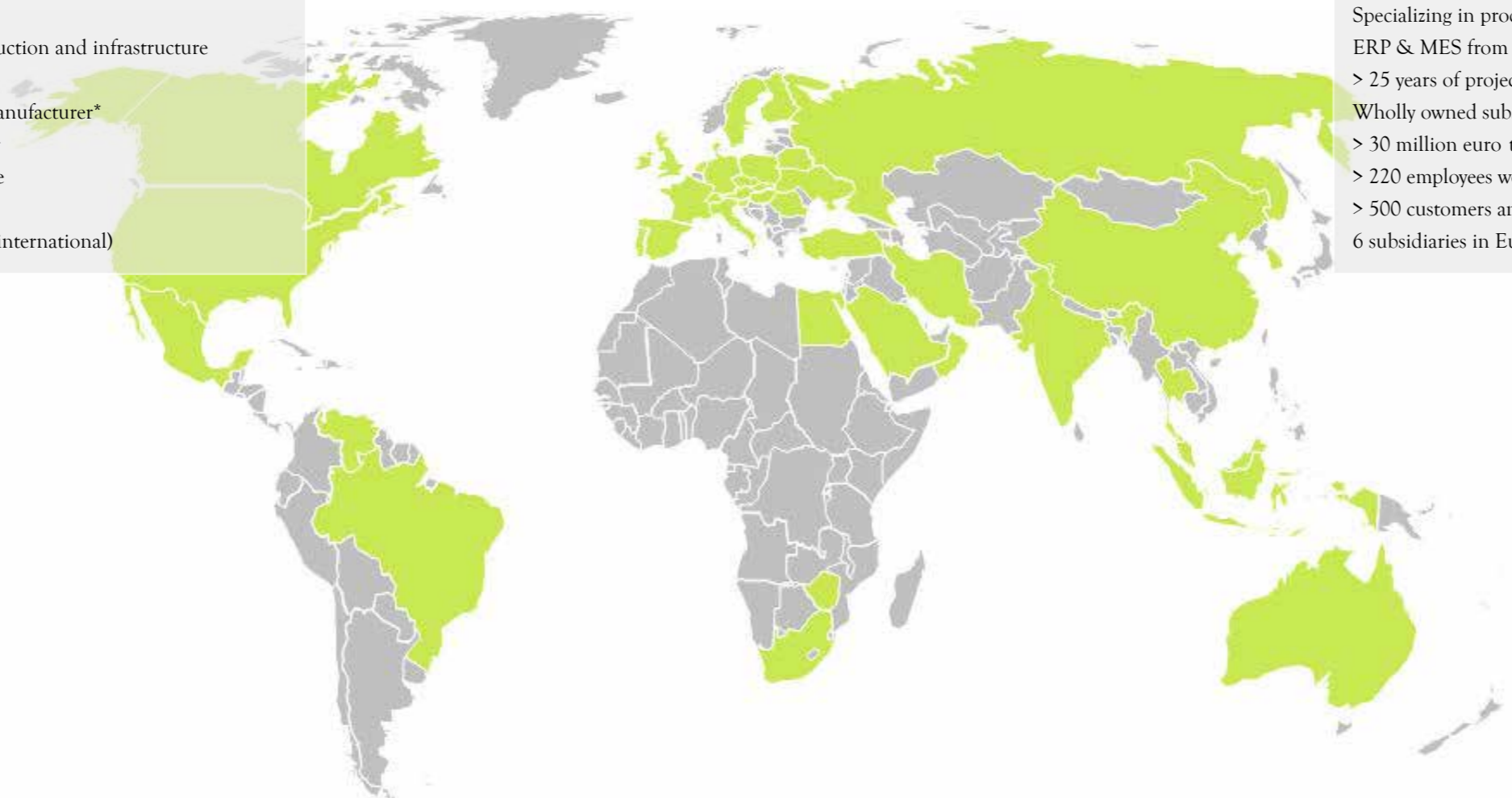ERP & MES from a single source
> 25 years of project experience
Wholly owned subsidiary of PSI AG
> 30 million euro turnover
> 220 employees worldwide
> 500 customers and over 30,000 users in total
6 subsidiaries in Europe and Beijing

PSI

Software for Perfection in Production

The range of functions available remains the most important criterion when it comes to choosing software, and goes a long way toward determining how well day-to-day business requirements are met. Over recent years, the ERP standard PSI*penta* has acquired a market-leading range of functions. The ERP suite is supplemented by powerful MES components and modules for adaptive production control. Find out how many of your requirements in the production environment are covered by our overall range of products.

PSIPENTA is also facing up to the new requirements posed by Industry 4.0. The smart factory needs to focus on people and tailor both applications and operating concepts to their needs. This requires role-based application concepts combined with flexibly configurable interaction interfaces.

PSI*penta*/ERP and the add-on components are the first choice when it comes to dynamic production processes, high potential for system integration and flexible production control.

▶ Outstanding Functionality
Versatile. Integrated. Automated.

Portfolio

- Enterprise Resource Planning, PSI*penta*/ERP
- Manufacturing Execution System, PSI*penta*/MES
- Planning, Execution and Control, PSI*penta*/PEC
- Adaptive Production Control, PSI*penta*/Adaptive
- Just-in-Sequence, PSI*penta*/JIS
- Mobile Solutions, PSI*penta*/Industrial Apps

Discover our unrivaled range of functions for production, and the philosophy we live by — "Software for Perfection in Production."

We can provide you with solutions for everything from Enterprise Resource Planning (ERP), to Manufacturing Execution System (MES) modules through to highly specialized applications such as Supply Chain Management (SCM) and Just-in-Sequence (JIS) production and delivery.

Our Planning, Execution and Control (PEC) modules operate in established software environments and provide functional depth at production level. All modules can be seamlessly integrated using the PSI*integration* interface. Based on our product standards, we have worked with customers from the corporate world, including SR Technics, an independent supplier of technical services in civil aviation, Linde and Volkswagen AG, to create project solutions that are ready for release.

Unique in the Market

- Extensive range of powerful order management functions supplemented by MES components
- Integrated shop-floor data collection & personnel time management
- Integrated finite-capacity scheduling
- Adaptive production control
- Multi-site (multiple plant management)
- Service management/maintenance
- Integrated EDI converter
- Continuous order reference
- Non-standard item handling
- Rough-cut planning
- Workflow

► # Production Planning and Control

Intelligent. Dynamic. Self-regulating.

This Gantt chart shows a multi-level production order structure (bills of materials and routings), which supports the planner in assessing the planning results.

Benefits

✓ Reduction in stocks with simultaneous improvement in adherence to deadlines

✓ Improvement in customer retention

✓ Automated updating of planning parameters

✓ Synchronization of value creation processes between sales, production and purchasing

With the adaptive production control in PSI*penta*, we offer much more than a standard ERP system, bringing you genuine competitive advantages.
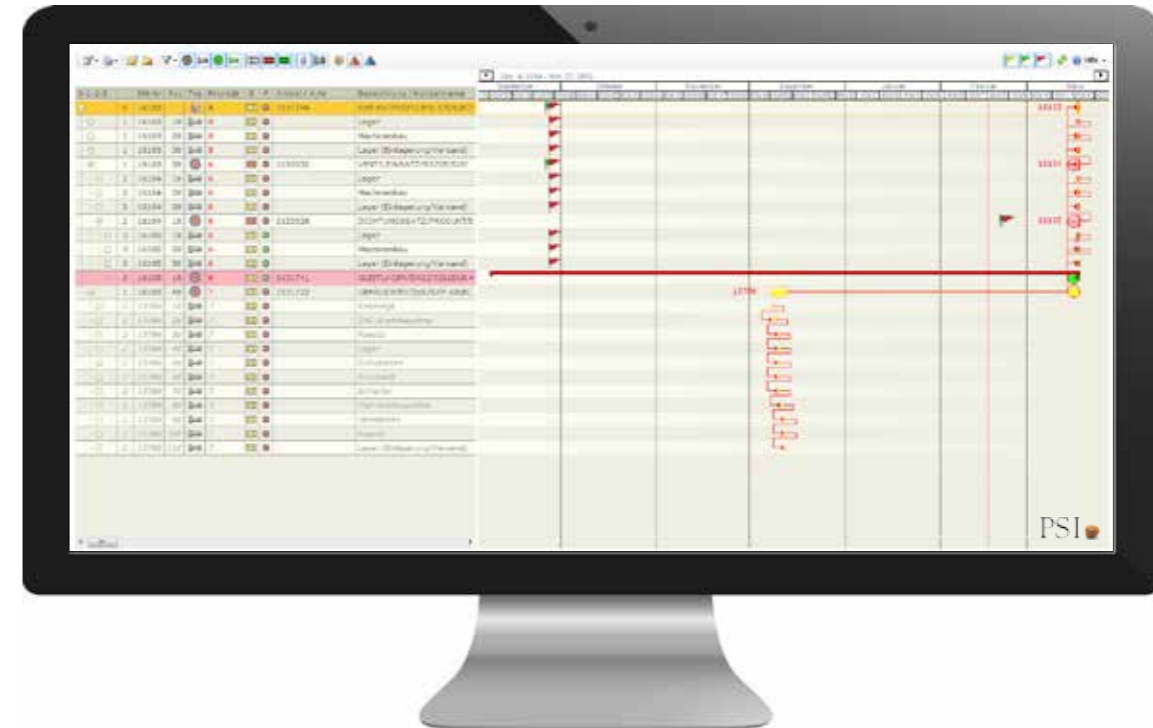
The aim of adaptive production control is to synchronize the production system with the sales and procurement markets. Its key elements are the targeted influencing of planning and production planning to minimize stocks and a gradual move over to the pull principle. The primary aim is to avoid waste and improve efficiency.

Scheduling customer orders on the basis of the capable-to-promise (CTP) method ensures that the necessary production structures can be planned without any backlogs and that realistic delivery dates can be calculated.

The planning parameters are continuously compared with actual values from production and procurement, and planning strategies are then adjusted in line with the market. This offsets any fluctuations in the sales and procurement markets and ensures that the company's objectives (e.g. stocks, delivery times, adherence to deadlines) remain achievable.

Faults in the production processes are identified and countermeasures can be initiated automatically. Order sequences and priorities are adapted to the actual situation in the production system by PSI*penta*/ERP.

Features

▫ Sophisticated ERP system with full range of functionality

▫ Delivery date calculation based on CTP

▫ Specification of market-driven delivery times and automatic replenishment control

▫ Automatic adjustment of the planning strategy

▫ Specification of reorder points and order quantities

▫ Determination of actual purchasing lead times and mean lead times

▫ Sequence planning and prioritization of work orders

▫ Backlog processing in the case of faults in business processes

▫ Synchronization of sales, production and procurement

▶ # Service Management

Easy. Understandable. Reliable.

Benefits
- ✓ **Increase in customer retention thanks to the provision of targeted supplementary services**
- ✓ **Reduction in warehousing costs through the integration of service, procurement and production**
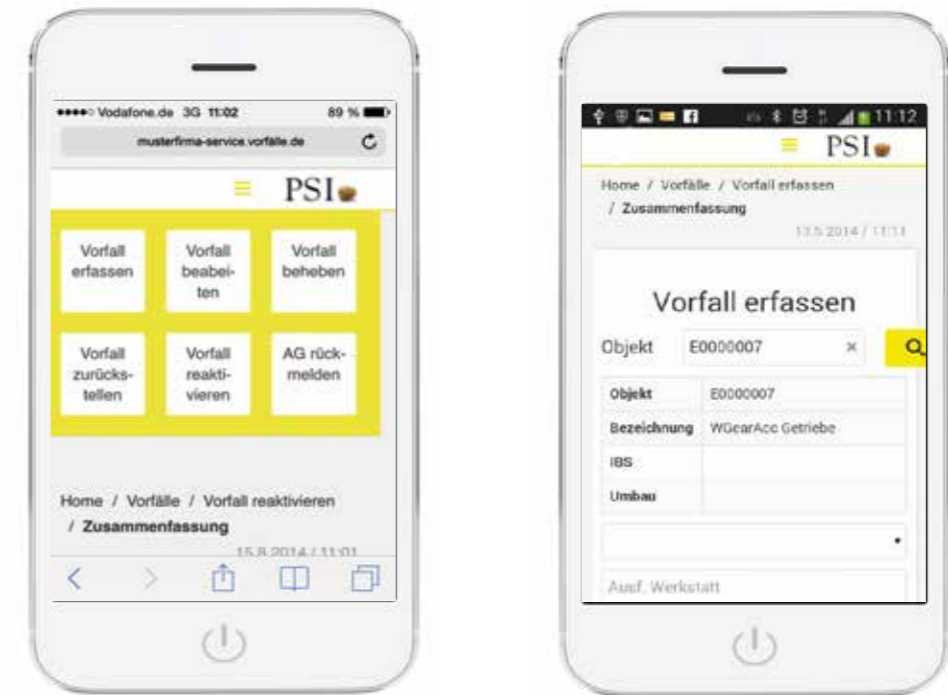- ✓ **Consistent documentation of the plant life cycle**

The central element of service management is the plant structure. This can either be created manually or flexibly generated from production structures. The individual elements of the structure are represented by service objects. These contain all the important data for a plant component.

You can record faults or planned events and assign them to an object. There are extensive options for categorizing faults, and faults can be made available for analysis. All plant or object-related events can be summarized in a plant file. Service management can also be used to map repair processes. It is possible to differentiate between repairs that are charged for and repairs under warranty. Repair quotations can be created if necessary.

Inventory management covers the requirements for a stable spare parts supply. Replenishment strategies can be incorporated seamlessly into the planning in the ERP system.

The service management functional area is integrated closely with the ERP suite. This results in significant advantages in terms of the spare parts supply.

You can connect to PSI*penta*/Service Management from your cell phone using Industrial Apps. This makes service employees' work significantly easier and speeds up data entry.

Features
- Provision of a structured overall view of a service object via the plant file
- Support for scheduled and unscheduled service events
- Mapping of standardized service activities including material provision
- Classification of events using different criteria
- Component replacement and consistent documentation
- Repair processing
- Consideration of serial numbers
- Entry of any number of actual or status values for service objects
- Mobile link for service personnel (PSI*penta*/Industrial App)

► # Business Reporting
Fast. Versatile. Informed.

Benefits
- ✓ Cross-system and cross-process view of data to obtain information
- ✓ Early identification of trends and risks
- ✓ Support for business decisions using key performance indicators

Ensure that all of your operational or strategic decisions are supported by fast access to up-to-the-minute key performance indicators for your business.

PSI*penta* Business Reporting optimizes analysis and reporting and provides all the components required to set up company-wide analyses and company cockpits. Relevant information is available quickly and in an attractive format. Interactive dashboards allow for the targeted analysis of data, as well as representing relationships and visualizing them in an attractive manner.

All systems in the PSI*penta* suite are available as data sources.

PSI*penta* Business Reporting provides fast and individually customizable data.

Features
- Analysis and ad-hoc reporting
- Web-based access to reports and analyses
- Comprehensive authorization system
- Use of all popular database formats
- Excel link
- Time and event-based distribution of reports
- Generation of dashboards & cockpits
- Extensive export options
- In-memory calculation

▶ Mobility
Always. Visible. Immediately.

Benefits

✓ Integration of field work into business processes with no media breaks

✓ Acceleration of processes and reduction of the possibility of errors

✓ Data entry at the place of origin and prevention of duplication of work

Increase the agility and efficiency of your company by using mobile technologies.

PSI*penta*/ERP provides mobile applications for a huge range of functional areas and for every mobile device, tablet or smartphone.

PSIPENTA provides apps for service management, personnel time management and management. The connectivity that comes as standard ensures seamless integration of these and other apps into your existing business applications.

Our mobile solutions are based on web-based hybrid technologies. This ensures that the most widespread mobile platforms are supported.

Features

- Smart apps for management
- Support for secure infrastructures (in-house, Internet)
- Comprehensive information functions
- Support for processes in goods receipt, goods issue, warehouse management and production
- Industrial Apps based on HTML5, CSS3 and JavaScript
- Industrial Apps for personnel time management
- Industrial Apps for service (incident management, actual value recording, component replacement)
- Use of Windows-based scanners for material management and production
- Support for different scanner technologies (barcode, data matrix, RFID) depending on the hardware

▶ # Internationalism
Multilingual. Global. Network.

Benefits
- ✓ Supports your company's growth in new markets
- ✓ Many years of project experience
- ✓ Centralized control of multiple plants

We speak numerous languages and will support you as you move into new markets. Our software uses the Unicode character set to ensure that the programs can be used in all user interface languages and with data content in different languages. This also enables Chinese or Cyrillic characters to be entered.

The software supports different time zones and provides functionality that is specifically tailored to the relevant markets.

In addition, the easy-to-configure multi-site functionality allows you to control cross-plant cooperation between sales subsidiaries, service centers and production sites.

With a link to myOpenFactory, an independent coordination platform for interplant order processing using electronic data interchange (EDI), we also support easy, standardized, cross-company communication.

The multi-site functionality is easy to configure and controls cross-plant cooperation between sales subsidiaries, service centers and production sites.

Features

- 📄 Unicode character set
- 📄 13 language and country-specific versions (Chinese, German, English, French, Italian, Dutch, Portuguese, Polish, Russian, Swedish, Spanish, Czech, Hungarian)
- 📄 Multi-plant management using PSI*penta*/Multisite

Technology for Future Production Processes

A piece of software's underlying architecture plays a major role in determining the capabilities and lifespan of the IT solution. We pride ourselves in developing state-of-the-art software that provides maximum functionality and investment security. With our Java-based solution architecture, we offer you a powerful platform which, with its modern user interface and numerous productivity improvements, provides you with the ideal technological basis for future production — efficient, urban and human. Benefit from our future-proof solutions.

Content: Technology

⊕ Java-based PSI Framework
⊕ User Interface
⊕ Interfaces

► Technology
Modern. Forward-looking. Stable.

Advantages
- ✓ State-of-the-art technological basis
- ✓ Wide range of options and functions
- ✓ Stability and high availability
- ✓ Modern, intuitive user interface
- ✓ Runs in various environments
- ✓ User-friendly, powerful, scalable and proven framework

Based on state-of-the-art Java technology, the PSI Framework offers high availability and scalability, and provides a powerful shared platform for all PSI products. Thanks to a modern user interface and numerous productivity improvements, adaptations to specific customer requirements can be carried out even faster. Customers also benefit from the PSI Group's large community of developers.

1 Industry solution

Expansion of the standard software with industry and customer-specific functions and algorithms. These include interfaces to existing business software or project-specific links to machinery using SCADA systems.

2 Application

Application layer providing standard operational functions with the look and feel of standard software. The functional areas available include optimization calculations, production control and logistics.

3 Framework

Fundamental interfaces and tools that are used by applications and are completely implemented in Java. This creates a basis for scalable, reliable and secure software solutions.

4 Infrastructure

Core elements that provide the components and services necessary to operate application software. The core elements are the operating system (client and server), databases and networks.

► # User Interface
Intuitive. Understandable. Adaptable.

Benefits
- ✓ **Sophisticated functionality — easy and understandable presentation**
- ✓ **Configurable for individual users and day-to-day tasks**
- ✓ **Clear and precise interaction**
- ✓ **Standardized design**

The key task of modern ERP systems is to provide complex functionality in an appropriate, everyday manner — especially in terms of the fourth industrial revolution. The PSI*penta* user interface is strictly geared towards the needs of users.

Key functions are prominently placed for quick access at all times. It is easy to learn how to use the functions, with continuous assistance to support you.

The user interface can easily be personalized. It is easy for users to set up their own personal desktop, containing only those functions that are relevant for their tasks. A wide range of graphical displays make even the most complex relationships understandable and ensure that the software is intuitive.

In day-to-day business, decisions frequently have to be made on the basis of interrelated information. These complex relationships can be visualized using synchronized views of different objects and provide reliable support for speedy decision making.

Sometimes, the standard solution is not enough. In these cases, we can use our technology (based on JavaScript) to implement release-ready solutions to meet specific requirements.

Our user interface can be tailored fully to the user's needs. It is laid out clearly and can easily be personalized. Numerous visualization options provide quick and easy access to information.

Features
- 📄 Interface configuration using drag & drop
- 📄 Free design of filters, tables, individual views
- 📄 Flexible combination of data on tabs or in drop-down areas
- 📄 Detachment of windows for independent editing
- 📄 Configuration of the menu tree
- 📄 Configuration of the toolbar
- 📄 Free layout of multiple windows within the interface and synchronization of content (connected views)
- 📄 Mixed display of graphics, tables and individual views
- 📄 Use of multiple role or user-specific profiles for different tasks
- 📄 Event-driven scripting for customer-specific release-ready functional enhancements (JavaScript)

► Interfaces
Secure. Flexible. Connected.

Benefits ✓ **Loose connection and robust adapters for stable application integration**

✓ **Support for the latest technologies**

✓ **Investment protection thanks to flexible integration options for existing software systems**

The PSI*integration* interface ensures flexible integration with applications, other systems or data sources.

The loose connection of different system components reduces interdependency and makes it easier to make changes to system components without destabilizing the entire system. This means that only the affected adapters are adjusted. In many cases the entire system is able to run throughout.

The architecture follows the hub-and-spoke concept, with all data traffic being routed through a central integration platform.

The integrated controller manages all communication. All telegrams transmitted are archived in a database.

All PSI*penta* components can also be integrated into existing software architectures using RESTful web services.

Data can be extracted from any format using different protocols, and can then be processed.

The results of the communication are provided in the required formats with the necessary protocols.

All PSI*penta*-modules have a standard interface (PSI*integration*) to popular systems such as SAP, Oracle and Microsoft.

Features ▫ Graphically supported configuration of interfaces and adapters (mapping)

▫ Processing of complex data relationships (linked data, master/detail structures)

▫ Options for flexible transformation of data during transfer from source to destination

▫ Combination of existing and new adapters

▫ Traceability of all transmitted data

▫ Availability of a large number of integration technologies

▫ REST and SOAP API for PSI*penta*/ERP and PSI*penta*/BDE

Software for Global Market Leaders

Many of our customers strive to become global market leaders. The majority of PSI*penta* users are already referred to as "hidden champions", well known for their market dominance, continuous growth and sustainable business models. These companies differentiate themselves from their competitors in the market through flexibility, a high level of automation in their production processes and optimum service quality.

By using our software products, PSIPENTA customers are able to fully tap into the potential in their day-to-day business processes. Maximum transparency, integrated business processes and efficient incorporation of multiple sites and mobile units increase production efficiency many times over.

Content: Industries & References

⊞ Our Customers
⊞ Machinery and Plant Engineering References
⊞ Automotive Industry References

► ## Our Customers

Successful. Innovative. Loyal.

Machine and plant engineering

Automotive supply industry

Vehicle manufacturing

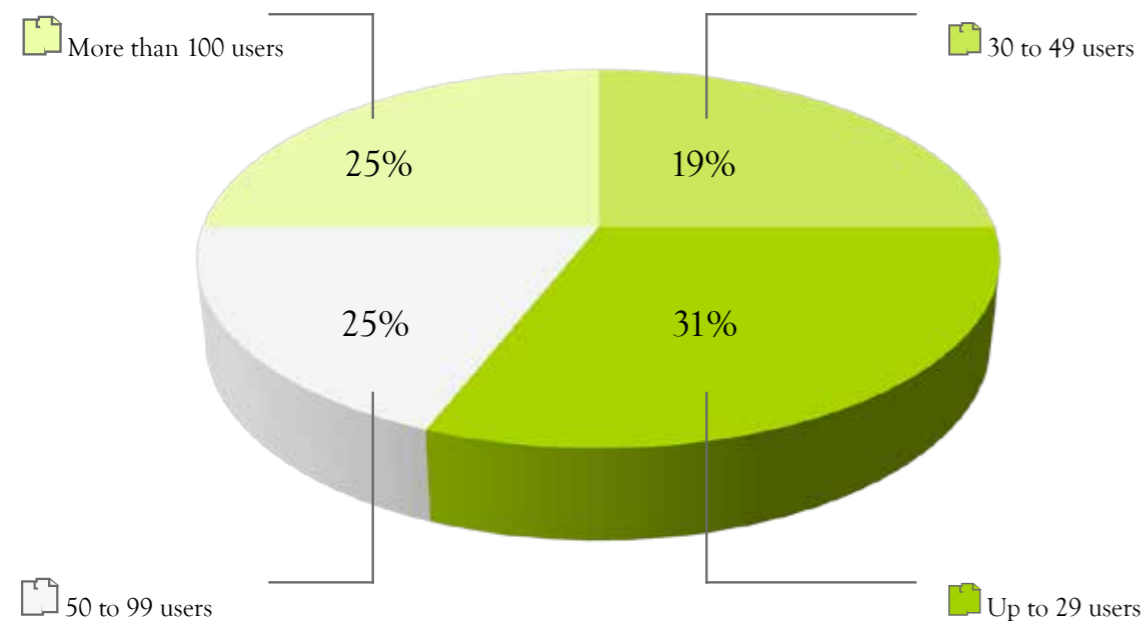**Aviation industry**

Device and equipment manufacturing

Electronics

Tool manufacturing

PSI*penta* customers by number of users

- More than 100 users
- 30 to 49 users
- 50 to 99 users
- Up to 29 users

25% — 19%

25% — 31%

Features

- SMEs, large corporations
- Make-to-order manufacturers, variant manufacturers, project manufacturers, series manufacturers, mixed-mode manufacturers
- Global market leaders, technology leaders, export world champions
- Average of 10 years using PSI*penta*
- 98% in maintenance

Benefit from the shared experience and advanced knowledge of our **customer community,** which is organized as an independent interest group (PSI*penta* user group or IPA).

In regional working groups, online chats and forums on the private online PSIng platform and at an annual meeting, the group discusses the latest issues, such as process improvements in day-to-day work, and shares experiences.

www.psing.org

▶ Example References
Machine and Plant Engineering etc.

Employees: 55
Customer since: 2011

Employees: 80
Customer since: 2006

Employees: 180
Customer since: 2007

Employees: 230
Customer since: 1998

Employees: 300
Customer since: 2001

Employees: 320
Customer since: 2007

Employees: 435
Customer since: 2001

Employees: 500
Customer since: 2012

Employees: 550
Customer since: 1990

Employees: 550
Customer since: 2008

Employees: 560
Customer since: 1999

Employees: 800
Customer since: 1997

Employees: 810
Customer since: 2006

Employees: 1,400
Customer since: 2009

Employees: 1,650
Customer since: 1984

Employees: 1,700
Customer since: 1990

We can identify with PSI*penta* and its approach and we feel that they understand us. We have found both the right system and the right partner for us.

Marco Jaßniger
Head of Information Technology
Wilhelm Bahmüller Maschinenbau-Präzisionswerke GmbH

We can map virtually everything in Standard and can use PSI*penta* to design structures that support the future growth of our company.

Harald Kurz
Head of Information Technology
teamtechnik Maschinen und Anlagen GmbH

Further references, user reports and customer opinions can be found here:

www.erp-demo.de   www.youtube.com/user/PSIPENTATV

► **Example References**
Automotive and Aviation Industry

DAMMANN
Employees: 115
Customer since: 2009

BvL
Employees: 150
Customer since: 2010

SAXAS
Employees: 200
Customer since: 2012

Langendorf
Employees: 235
Customer since: 1999

Rauchle
Employees: 400
Customer since: 2012

HOLMER exxact
Employees: 400
Customer since: 2006

KWD AUTOMOBILTECHNIK
Employees: 470
Customer since: 2008

FENDT CARAVAN
Employees: 500
Customer since: 2000

Rhätische Bahn
Employees: 1,400
Customer since: 1997

Hobby
Employees: 1,600
Customer since: 2000

Audi Werkzeugbau
Employees: 1,900
Customer since: 2006

SCHWARZMÜLLER
Employees: 1,950
Customer since: 2001

VW
Employees: 2,000
Customer since: 2002

LÄPPLE
Employees: 2,000
Customer since: 1995

SR Technics
Employees: 3,200
Customer since: 2010

Formel D
Employees: 4,000
Customer since: 2010

> If a customer decides at short notice that they want to replace their standard headlamps with xenon models, we can quickly implement the change with PSI*penta,* even if the vehicle is already on the production line.
>
> **Marko Lemmel**
> Head of Information Technology
> Herbert Dammann GmbH

> For the first time ever, we now have a realistic overview of our entire factory. All it takes is the push of a button and I can see the layout of the entire planning structure.
>
> **Hans-Peter Rudolph**
> Project Manager — IT
> Läpple Dienstleistungsgesellschaft mbH

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