PSI Technics

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CONSULTING & ANALYSES

PSI Technics offers modular analysis services that are perfectly tailored to your needs.

Powerful analysis methods for intralogistics facilities

Service Life, Motion Path and Control Technology Analyses

Energy Consumption and EMC Analyses

Temperature and Humidity Analyses

Custom Analyses




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PSI Technics offers customers a variety of modular analysis services specifically tailored to intralogistics facilities.

	Level I	Level II	Level III	Level IV
	Delivers reliable data at a reasonable price/ performance ratio. These services are part of PSI Technics' entry level analysis portfolio.	Builds on our entry level service offering by providing detailed insights – from identifying causes of underlying problems to achieving manageable costs.	Offers additional tools for achieving even more comprehensive and detailed analysis results.	Goes beyond the first three levels and includes relevant solutions that perfectly match the requirements of your individual application.
Service Life, Motion Path and Control Technology Analyses	Motion Analysis Baseline Analysis	Strain Gauge Analysis Component Service Life Calculation	Strain Gauge Analysis Machine Service Life Calculation	Custom Analysis e. g., Virtual Modeling / Finite Element Analysis
Energy Consumption and EMC Analyses	Energy Consumption	EMC Analysis Baseline	EMC Analysis Detailed	
Temperature and Humidity Analyses	Temperature and Humidity Analysis			

Motion Analysis
To identify hidden optimization potential PSI Technics' unique FLP6000MA Motion Analysis Software evaluates the acceleration, velocity and traveling path of your ASRS system.
The software shows every value that is sampled during a long-term motion analysis. The FLP6000MA substantially boosts productivity in combination with PSI Technics' FLP6000MC. They contribute to a considerably increase in motion path efficiency and to optimizing cycle times by up to 15%.

Energy Consumption
PSI Technics' energy consumption measurement delivers insight into the energy consumption of your ASRS machines.
A comparison between different drives or closed-loop control settings reveals the machine's energy usage and offers a means to identify both energy consumption and optimization potential and take appropriate measures.

Baseline Analysis
Our baseline analysis combines motion analysis and energy consumption measurements and is the ideal entry level analysis for an evaluation of your intralogistics system.

Temperature and Humidity Analysis
PSI Technics' temperature and humidity analysis helps to identify weak spots, problems and sources of interferences at an early stage to prevent consequential damages. Miniature data loggers are used to strategically record long-term ambient temperature and humidity. This allows for an easy and reliable monitoring of areas that require a precise, diversified and detailed temperature control.
After the recorded data has been analyzed and evaluated, weak spots can be diagnosed and eliminated.

Strain Gauge Analysis / Component Service Life Calculation
PSI Technics' strain gauge analysis calculates the service life of individual machine components that are subject to particularly high stress or strain. Stress-related data is obtained through measurements and enables the recording of even the smallest peak loads that are then factored into the expected lifetime calculation.

EMC Analysis (Baseline)
Electromagnetic interference (EMI) can cause operating problems as well as costly downtime of electrical and electronically controlled devices, machines and facilities. EMI can pose health risks to your workforce. On-site EMC analyses are conducted at the client's facilities and document the electromagnetic conditions, which are analyzed and evaluated to identify sources of EMI so corrections can be made.

Strain Gauge Analysis / Machine Service Life Calculation
Compared to the baseline offering, this analysis covers measurements and service life calculations for an entire machine. Measurement points are selected based on a comprehensive finite element calculation. For particularly critical spots, a more comprehensive level II analysis is performed and the results are combined and compared.

EMC Analysis (Detailed)
PSI Technics performs on-site or laboratory electromagnetic compatibility (EMC) analyses on behalf of its customers to detect and eliminate sources of electromagnetic interference. This includes the recording of electric and magnetic fields as well as performance-related values that frequently impact the electromagnetic compatibility of machines. In addition EMI may cause inexplicable disturbances or malfunctions, and impact the client's workforce. We then work with the customer to develop appropriate solutions.

Custom Analysis e. g., Virtual Modeling / Finite Element Analysis
Virtual modeling is part of our portfolio of analysis services. To date, renowned companies successfully rely on this service offering to achieve substantial improvements in cycle times, energy conservation, reliability and facility lifespan. We empower customers to fully utilize the hidden potential of positioning technology to achieve tangible results.
For additional information about this service offering or supplementary case studies, please contact us at support@psi-technics.com.

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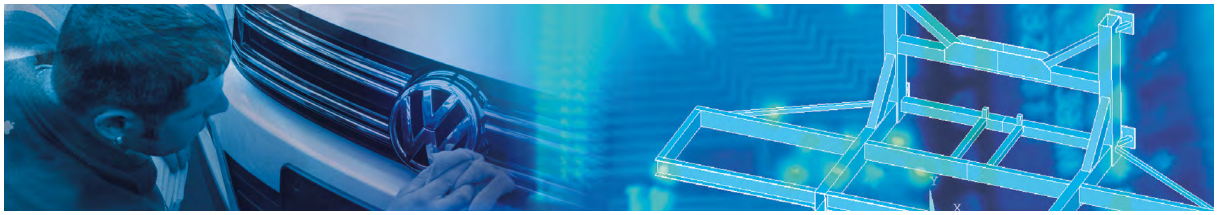
CONSULTING & ANALYSES

A Case Study from the Automotive Industry: Virtual Modeling Reveals Huge Optimization Potentials at Volkswagen

Image Sources: PSI Technics, Volkswagen AG



PSI Technics is designing the new positioning standard in cooperation with Volkswagen AG in Wolfsburg, Germany.

The Volkswagen AG Conveyor Technology Planning department (PWG-P/F) commissioned PSI Technics to analyze and evaluate a vertical material lift in a vehicle body warehouse. The successful cooperation was aimed at developing a new positioning standard for similar vertical lifting systems.

Virtual modeling provides reliable data and extensive insights into machine behavior.

Virtual modeling – an analysis of machine behavior via computer modeling – was used to simulate all relevant system components and to digitally recreate a variety of different loading conditions. Volkswagen's goal was to reveal optimization potential with regard to improving cycle times, system stability and reduced wear.

Many renowned customers rely on solutions from PSI Technics, including:
ABL Technic, AK Steel, Aleris, Automation Machine Design, Corus, Daimler, Hanson Pipe & Precast, Hong Kong Air Cargo Terminals Ltd., Konecranes, Logan Aluminum, Novelis, Ovako, Robert Bosch, Rotalec Group, Inc., Salzgitter Stahlhandel, Sapa Alluminio Ornago S.p.A., Shanghai General Motors, SKF, Stollwerck, TRW Automotive

By using virtual modeling, different drive and closed-loop configurations could be compared and evaluated with regard to their cost-benefit ratio prior to retrofitting the XSB51 vertical material lift. Based on Volkswagen AG's positive experiences with PSI Technics' ARATEC Positioning Solution System at their Wolfsburg factory, the ARATEC was also used for the virtual modeling pilot project.

Revealing and realizing optimization potential.

A motion analysis was performed to determine the system's current motion profile, which provided a basis for identifying optimization potential. All existing loading conditions and motion sequences were simulated in a **virtual model using finite element methods (FEM)**, multi-body models and controller modeling. FEM is an accepted method of obtaining detailed analysis data. The results were verified against the actual operation of the system and illustrated the benefits of using an intelligent positioning controller versus the more common PLC- or drive-based open-loop control generally designed by OEMs and system integrators. In general, a stress reduction of 10% that can be achieved based on the analysis results can increase a system's lifespan by 50%.

The retrofitted vertical lift fulfilled and exceeded all of Volkswagen's expectations regarding cycle times, stability, reduced wear and power consumption. As calculated during virtual modeling the system's mechanical stress was reduced by more than 15%. At the same time, power consumption decreased and cycle times were reduced by 30%.

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