

EVT Eiberger Verfahrenstechnik GmbH, Germany

Consistency ensures high availability



Integrated Drive Systems offers consistency across the board – also for engineering and diagnostics

As a midsize manufacturer of high-quality degreasing and cleaning equipment, EVT relies on system consistency when it comes to engineering. Thanks to Integrated Drive Systems, the company has been able to further increase the availability of its equipment and is now in a position to offer warranties of up to three years.

For the past two decades, EVT Eiberger Verfahrenstechnik GmbH has been building equipment for the cleaning and degreasing of workpieces. One essential aspect of both construction and service for all the equipment is the consistency of the systems, which is a critical factor for efficient engineering, high product quality, and fast (remote) service. Following this philosophy, EVT has been using solutions based on Totally Integrated Automation (TIA) for years. In Siemens, the Swabian degreasing equipment specialist has found the perfect partner: "I feel very well taken care of by Siemens; the collaboration is fantastic," confirms Ralf Götz, head of electrical engineering, who is responsible for implementing modern automation solutions at EVT.

Seamless drive technology

Since the summer of 2013, drive technology has been seamless, from the control system to the geared motor. Significantly higher process engineering requirements and completely new challenges for the drive technology made this transition to Integrated Drive Systems (IDS) necessary. Until a few years ago, the company delivered its equipment primarily to metalworking businesses. Today, the focus is on solutions for the optical industry and domestic medical engineering. The basket for the workpieces therefore must be moved with considerably greater sensitivity and be adjusted to the process-related motion curves very precisely. "This works best when the control system, frequency converter, and geared motor are optimally coordinated, as Siemens ensures as part of its IDS strategy," says Götz.

Consistency creates clarity

The control core of almost all the cleaning and degreasing equipment by EVT is the fail-safe Simatic IM 151-8F controller from the ET 200S product family. In addition to the controller's high efficiency, the specialists at EVT most appreciate its three Profinet terminals. Costa Burkhardt, technical director at EVT, explains: "This communication technology is indispensable for our integrated automation solutions and our (remote) services." That is why it is so important that as many components as possible communicate with the controller via Profinet. The fail-safe Sinamics G120 and G120D frequency inverters, for example, do this.

The added value of IDS becomes clear when looking at a typical real-life case: If no temperature sensor is connected, a frequency inverter calculates the winding temperature in the three-phase induction motor based on a sophisticated motor model. An exact calculation is possible because Siemens' motors and frequency inverters are perfectly coordinated with each other. The EVT experts found that in comparison, smaller third-party motors under 10 kW often require the input of additional motor data, since there may be miscalculations otherwise. "We already had that happen, which resulted in an incident at a customer location abroad, although the motor temperature was fine," says the technical ▶▶

IDS in TIA Portal

Siemens Integrated Drive Systems (IDS) stands out due to its three-fold integration: horizontal, vertical, and throughout the lifecycle.

Horizontal integration means that the entire drivetrain is constructed in a consistent way. Vertical integration means that the drive system can be optimally integrated into the overall automation system, and lifecycle integration simplifies engineering with supporting software and offers service over the complete lifecycle.

This concept makes it possible to completely integrate IDS into the world of Totally Integrated Automation (TIA) – and thus into TIA Portal. The engineering framework offers programming, parameterization, visualization, and safety technology from one source, reducing the required engineering time by 30%.



With IDS, EVT relies on drive technology as a package – from the controller to the inverter to the motors – and is thus able to better respond to increasingly demanding customer requirements



director. “Since cleaning and/or degreasing are often a bottleneck in production, the equipment tends to run around the clock – and a breakdown therefore has far-reaching consequences for production.”

Another typical example of the great benefits of IDS is the optimal control voltage for any existing engine brakes. This function can be implemented with significantly less effort and less susceptibility to failure using the Sinamics frequency inverters. They are simply connected to the Simogear geared motors via a preassembled direct line – including the appropriate braking voltage.

Drive solution with integrated safety technology and consistent engineering

The SSI/HTL combination sensors necessary for speed regulation and positioning are also already integrated into the geared motors. They are required in order to be able to precisely preset angular speeds and angular misalignments of the cleaning barrel via corresponding control algorithms. For the experts at EVT, one of the major advantages is that the frequency inverters are available both as a central and as a distributed solution. Depending on the set-up of the plant, the equipment either fits into the control cabinet or, alternatively, is installed within the process control equipment on-site.

The integrated safety technology also reflects the great usefulness of the drive technology. For example, the Sinamics G120 inverters cover various safety scenarios, of which Safe Torque Off is the most important for EVT, since in many cases it is sufficient for the cleaning barrel to come to a safe stop when the emergency stop has been actuated.



“The seamless integration of the drive technology and now the drivetrain also simplifies our worldwide service.”

Ralf Götz, Head of Electrical Engineering, EVT



Siemens AG

The corresponding signals are safely exchanged between the fail-safe control system and the fail-safe frequency inverter via Profisafe.

The consistency of the system also allows for easy diagnostics. For example, not only is it possible to speed up commissioning with the Starter software, but the user can also easily determine the drive's status. The EVT service personnel can access and, where required, adjust any information and/or parameters worldwide via the Internet using the MP277 touch-panel. The panel runs with Smart Client software, which makes remote servicing possible. This is a key advantage, as Burkhardt and Götz confirm: “We are able to correct more than 95% of all incidents via remote service.”

For both experts, system consistency throughout the entire engineering process also is of great importance. With the Sizer program, users can plan the drives in a way that optimizes technology deployment, energy efficiency, and cost-effectiveness. This can even be done online using the DT (Drive Technology) configurator. After the planning is complete, all the technical documentation (such as dimensional drawings, EPLAN macros, and characteristic curves) is already available. “The best part, however, is that you can send your performance requirements to the Siemens technical advisers, who then determine the ideal solution for free,” emphasize Götz and Burkhardt.

As much as possible from one source

“Through real-world implementations, we have come to appreciate the great benefits of plug-and-play solutions,” explains Burkhardt. Now, Siemens drive

technology is also a part of this, together with the new Simogear geared motors with standardized connectors. The corresponding cable links not only save time during the set-up of the equipment but also ensure electromagnetic compatibility. The modular design of the Simogear series even enables easy subsequent adjustment of the geared motors in response to design changes.

“We want to have as much as possible from one source.” This is the unanimous conclusion of those responsible at EVT, who know that with TIA, and also IDS, all the components within the automation system and/or the drivetrain are perfectly matched to each other. This reduces the engineering effort required in designing the individual pieces of cleaning and degreasing equipment and creates the necessary foundation for economic efficiency. In addition, thanks to the professional remote maintenance system, EVT is now able to offer a full three-year warranty on its equipment – a service that is anything but usual in the mechanical engineering industry. ■

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