

The Siemens logo is displayed in a white box in the upper left corner of the image. The background of the entire page is a photograph of a busy automotive manufacturing shop floor with various machinery and conveyor systems.

# SIEMENS

## Success Story

# Siemens circuit breaker promotes energy efficiency in major automotive plant

[usa.siemens.com/3VA](http://usa.siemens.com/3VA)

Digitek shop floor, fully loaded, 12 machines with Siemens hardware throughout

## Green technology is on the rise in the automotive industry

At the forefront of these endeavors are innovations that focus on improving environmental issues through sustainable manufacturing practices. Major automotive companies are looking for new ways to cut down on their energy consumption.

To this end, DigiTek—a leading provider of innovative test solutions proposed designing and implementing a new way of monitoring energy usage at one midwest automotive

plant. Specifically, the solution needed to provide integrated power monitoring replacing separate current transformers. It also had to communicate with a programmable logic controller (PLC) and human-machine interface (HMI) over a network and eliminate a potentially dangerous 480VAC electrical connection to a door-mounted monitor which is typical in many existing power monitoring applications.

In this application example, we'll explore how the Siemens 3VA6 Circuit Breaker fit the bill—reducing costs, promoting energy savings, and improving worker safety at a 3-million-square-foot facility in Kokomo, Indiana.





3VA6

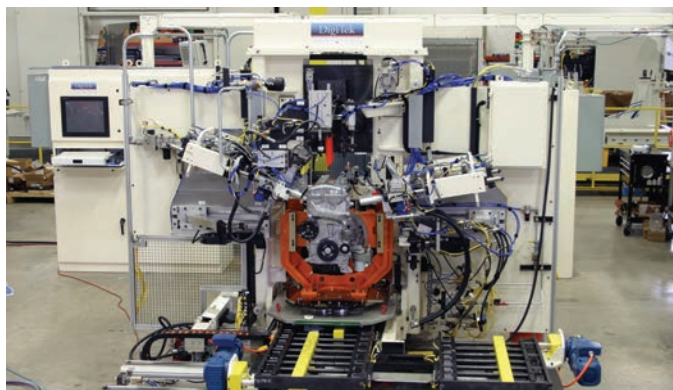
Digitek system installation in Shanghai, China

## A specialist in automotive testing

Based in Livonia, Michigan, DigiTek is a decade-old company that designs, engineers and delivers innovative test equipment for transmissions, engines and other powertrain products in the automotive and off-highway industries. The company's solutions include a wide variety of production tests—everything from leak testing, to electric vehicle (EV) battery testing, to full engine testing.

"We specialize in advanced propulsion testing systems," says Tom James, who helped found DigiTek in 2010. "All our machines meet the automotive industry's strictest standards of repeatability, and we've proven we can do this well." In fact, despite the company's short history, it has already gained the attention of major automotive and off-highway companies like GM, Caterpillar, John Deere, Hyundai and many more. It has also expanded its services to five other countries—South Korea, China, India, Mexico and Italy.

"Although we're relatively small and operate in a niche market, we're unique in our ability to deliver high-end test equipment and engineering services at the level that we do," James says. "We're also actively pursuing markets that are trending toward electric vehicles."



Engine cold test equipment



One of 25 final test stands for transmission testing



Production leak test equipment

DigiTek's SiEVT end-of-line (EOL) test machine, for example, currently tests front-wheel drive (FWD) hybrid transmissions. The company also routinely conducts EV battery tests, as well as electrical and advanced propulsion tests for electric motors, fuel cells and sensors. As green technology continues to rise in popularity—with global sales for EVs projected to cross 60 million vehicles by 2040—these testing processes have become all the more important, making powertrain electric test systems indispensable to EV quality and safety.

## Safe, cost-effective energy monitoring

With the automotive industry trending toward energy efficiency, DigiTek was recently tasked to provide a safe, cost-effective solution for monitoring energy consumption in the





Large turn-key off-highway transmission test system

Kokomo, IN plant. At the time, the automotive company was utilizing separate current transformers, which are often difficult to install and mount securely. In addition, a separate monitor screen, which was mounted on the door of the panel, required a 480-volt connection. "Each time maintenance personnel wanted to inspect the panel, they had to open the door," explains Jim Sirois, Vertical Market Development Manager, Control Products at Siemens. "But having the 480-volt connection on the door was potentially dangerous. Over time, the wires could become loose—creating a potential hazard for operators and maintenance personnel."

To come up with a solution, DigiTek consulted Siemens, whose products DigiTek was already familiar with and utilized in the Kokomo plant. "Siemens is more accepted globally by our customers," says James. "Many of our customers are large, global corporations and so they prefer global solutions."

To meet the applications requirements, the Siemens-DigiTek team selected the Siemens 3VA6 Circuit Breaker, which reliably protects circuits and starter combinations in industrial applications, infrastructure and buildings. Thanks to its integrated power monitoring method, it effectively replaced the separate current transformers in the panels. Able to communicate with PLCs and HMIs over a plant-wide network, the 3VA6 also includes open interfaces and standard protocols—PROFIBUS, PROFINET, Modbus TCP and Modbus RTU—for seamless integration into existing technical infrastructure and automation environments. As a result, it eliminated the need to bring 480 volts to a door-mounted monitor—or have a separate monitor at all.

### A first of its kind circuit breaker

The 3VA6 is ideal for any machine that requires circuit protection. It has communications and power metering capabilities integrated into it—both of which break new ground for circuit breakers. "Typically, these were all separate systems,"



Transmission valve body air test



Transmission lab noise test machine

Sirois says. "But now, you have a single unified piece of equipment that can communicate directly with plant personnel who need the information."

In addition, the 3VA6 complies with UL, IEC, and CCC standards, enabling users to take advantage of its functionalities in Europe, North America, and Asia. It is also the only circuit breaker on the market to offer pre-cut probe holes in its terminal shields. Other circuit breakers integrate shields that cover everything, making it difficult for electricians to check the voltage. "To get the cover off, the electrician must first shut off the overhead bus plug—turning what should be a 30-second process into half an hour," Sirois says. "Offering the 3VA6 with pre-cut voltage probe holes is a huge convenience for our customers allowing them to quickly perform their safe Electrical Lockout Procedures."

Other notable features of the 3VA6 Circuit Breaker include:

- Line protection from 40 to 1000 amps
- Breaking capacity up to 200 kilo amps at 480 volts AC
- Electronic trip unit
- Three- or four-pole versions
- Integrated measuring function for current, voltage and energy values
- Communication via PROFIBUS, PROFINET, Ethernet IP, Ethernet (Modbus TCP), Modbus RTU
- Wide range of internal accessories—auxiliary and alarm switches, shunt trips and many more—that are universal to the product line

**Improving worker safety, energy savings and more** The 3VA6 successfully lowered hardware and installation costs, improved safety and promoted energy savings in the Kokomo plant—all while providing a single point for configuration and monitoring.

**Worker safety.** The circuit breaker eliminated a potentially hazardous voltage connection to a panel door—improving the safety of operators and other personnel coming into regular contact with it. The device provides a single point for configuration and monitoring accessible via TIA Portal, Powerconfig configuration software, or directly using the circuit breaker keypad.

**Time and energy savings.** Configuration software facilitates commissioning and maintenance work, while power monitoring software manages and archives the acquired energy data for analysis. "Thanks to the 3VA6, personnel have a good idea of

the plant's energy consumption—shedding light on how they can lower their bills," Sirois says. "Seeing how specific pieces of equipment consume energy also gives them a heads up about potential maintenance issues."

**Ease of use.** Chuck Coak, DigiTek's lead electrician for the Kokomo plant project, describes the 3VA6 as simple and straightforward to use. "When we first hooked the 3VA6 up, we had to configure it to the right voltage and current level," Coak says. "There were no issues with this process; the software was easy to use and can be freely downloaded from the Siemens website."

**Cost savings.** By replacing the separate current transformers, the 3VA6 provided a clean, professional-looking installation that reduced the amount of components—lowering hardware costs by as much as 17 percent.

#### **Optimizing the EV testing process**

DigiTek has big plans for the 3VA6 Circuit Breaker in its EOL test equipment. Whether a hybrid or automatic standard gear transmission, engineers can use the device to see if one motor demands more power than another. They can also use it to quantify internally regenerative transmissions, which tend to mask some power consumption. "Electric vehicles are becoming more popular, and we could use the data from the 3VA6 to optimize our electric testing process," James says. "Better understanding the role of the motor in the powerchain is critical."

To learn more about the Siemens 3VA low-voltage circuit breaker, visit the [Siemens product page](#).

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