

# FORGING

HOME
CURRENT ISSUE
ISSUE ARCHIVE
SUBSCRIBE/RENEW
ADVERTISING INFO
CAREER CENTER
INDUSTRY EVENTS
CONTACT US
FORGING SUPPLIERS DIRECTORY
QUICK MANUFACTURING NEWS

October, 2006

 [EMAIL THIS](#)

 [PRINT THIS](#)

 [REPRINT/LICENSE THIS](#)

## A Different Approach to Press Hydraulics

*A new player in the forging industry. Kadant AES, brings a new approach to press hydraulics.*

Search:

In the May/June issue of Forging, Consolidated Industries of Cheshire, CT, was profiled for its implementation of a new technology on a 2,500-ton forging press. Consolidated's obsolete hydraulic-power system was replaced with a Unigy system, from [Kadant AES](#).

Kadant AES is a relatively unknown name among forging manufacturers, but that may change soon and much of the credit will go to Peter Carstensen, who has been instrumental in designing a new approach to press hydraulics.

As chief technology architect for Queensbury, NY-based company, Carstensen has spent the past five years developing Kadant's new approach to high-pressure hydraulic system control and supply — Unigy. This technology has the potential to set higher standards for hydraulic forging press operating efficiency, at the same time that it reduces the cost and complexity of press hydraulic systems.

Following here, with a question-and-answer approach, Carstensen explains the new technology and how it has benefited forging operations like Consolidated Industries.

### **First of all, what is Unigy, and what makes it so different from conventional hydraulic systems?**

**Peter Carstensen:** Well, in one sense, Unigy is revolutionary. It changes how hydraulic systems operate. But in other respects, it's clearly an evolutionary approach to improving hydraulic efficiency, since it relies on well-proven technologies.

In a conventional forging-press hydraulic system, the pump is coupled to a constant velocity motor and therefore produces flows and pressures not fully utilized throughout the production process.

This means the constant hydraulic output must be controlled and diverted by a range of proportioning, pressure reduction, flow control, and bypass valves. Whenever the production energy requirement is less than the hydraulic energy created, the excess flow produced equals wasted energy, which is converted into heat as it flows through bypass circuits, and necessitates the addition of cooling loops or systems.

Essentially, what Unigy technology does is move hydraulic control from the hardware end of the system directly to the system's prime mover, the motor driving the pump. This system, which is covered by international and U.S. patents, uses proprietary, state-of-the-art high-resolution incremental pump motion controls and algorithms, along with proven motion-control equipment and hydraulic hardware. This means that Unigy provides precise, hydraulic output control at the

pumphead that directly matches the production requirement — thereby eliminating excess outputs and the energy they waste. Unigy systems typically reduce energy consumption by 60% or more.

In addition, it eliminates the need for all the downstream flow and pressure controls and bypass loops, which as you can imagine, greatly simplifies hydraulic system design. By eliminating excess flows and wasted energy, a Unigy application can minimize, or even totally eliminate, fluid cooling requirements.

Unigy even can dramatically reduce noise produced by the hydraulic pump, because it no longer needs to constantly run at its highest speed.

### **Has Unigy's performance — and most importantly its energy savings — been well-documented?**

**Peter Carstensen:** Definitely. With over 100 Unigy installations, including forging presses, we have a strong cross-industrial base for our performance data. In fact, we had to demonstrate the system's energy saving's potential, via independent third-party verification, in order to get developmental funding assistance from the New York State Energy Research and Development Authority (NYSERDA). From the very beginning, we've had to prove that this system works.

Since then, Unigy users have gotten independent verification from official entities such as Pacific Gas & Electric, Connecticut Light & Power, and San Francisco State University, as well as NYSERDA. And, of course, users have seen the real proof in their lower energy bills.

We've even built documentation right into each Unigy system, with a transparent energy consumption data logging process for before and after Unigy's installation, which allows the end user to verify the information easily.

### **You say there are over 100 Unigy systems being used in a range of applications. Can Unigy be used with any hydraulic system?**

**Peter Carstensen:** At present time, Unigy is only suitable for driving positive-displacement pumps. And while any positive-displacement pump in an existing hydraulic system can benefit from Unigy, to achieve the full potential benefits requires a pump that's able to operate at high pressure over the full flow capacity. Fortunately, pumps capable of this service are available from a number of well-respected pump manufacturers.

### **What led you to develop Unigy?**

**Peter Carstensen:** Well, for nearly 20 years we've been addressing the needs for greater control, efficiencies, and reliability in high-pressure water applications for Kadant's demanding clients in the pulp-and-paper industries. In fact, the genesis for Unigy was our work on a high-pressure shower system we developed for paper mills. Although this was a very specialized application, it became clear to us the basic solution had broad applicability for any hydraulic system that had to deal with cycling and intermittent demands.

So, by developing some specific features and benefits for high-pressure hydraulic oil systems, we were able to create a system that can be applied to nearly any hydraulic motion-control function, from presses and plastic injection molding machines to log handling and tube bending.

### **What kind of impact do you think Unigy will have on the field of high-pressure hydraulics?**

**Peter Carstensen:** We truly believe that Unigy's technology approach has the ability to revolutionize high-pressure hydraulics. Much like the way variable-speed drives are changing the centrifugal and fan pump industry, we see Unigy as basically changing the way high-pressure hydraulic systems are designed — and how they perform on the factory floor and on a company's bottom line. The potential here is enormous.

**How is Kadant AES marketing Unigy to the forging industry?**

**Peter Carstensen:** In the pulp-and-paper industry, Kadant has long been seen as a solutions provider, someone who understands the processes and knows how to address and solve each customer's individual problems. So, to provide that same level of service in other industries, we're teaming up with up with recognized experts in each industry, like hydraulic systems providers, OEM's, integrators and forging machine re-builders.

*For more details on the Unigy system, call 1-800-937-2999, ext 637, or visit [www.kadantunigy.com](http://www.kadantunigy.com).*

*by Forging Staff ([forgingstaff@penton.com](mailto:forgingstaff@penton.com))*

---

Copyright © 2006 Penton Media, Inc.

[Copyright Notice](#) | [Privacy Policy](#)

