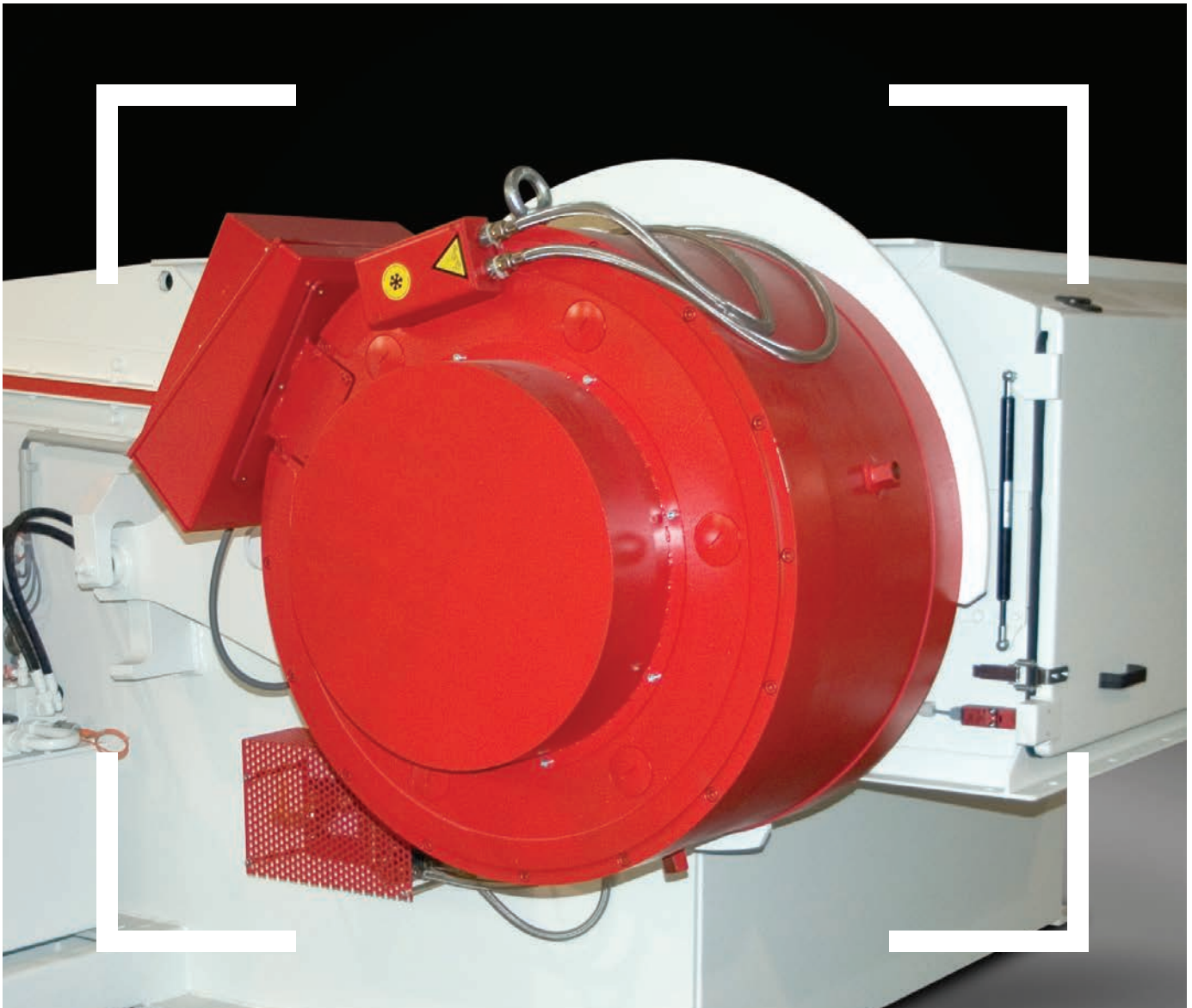


HiTorc™

Magnetic Pulse Drive

Vecoplan®



HiTorc™ Magnetic Pulse Drive

Vecoplan's energy saving innovative drive design increases throughput while decreasing energy use.

Vecoplan HiTorc™ Magnetic Pulse Drive

The Goal:

We set out to develop a motor drive system that would significantly increase throughput of our shredders, yet dramatically reduce power consumption. The result is the HiTorc™ Magnetic Pulse Drive.

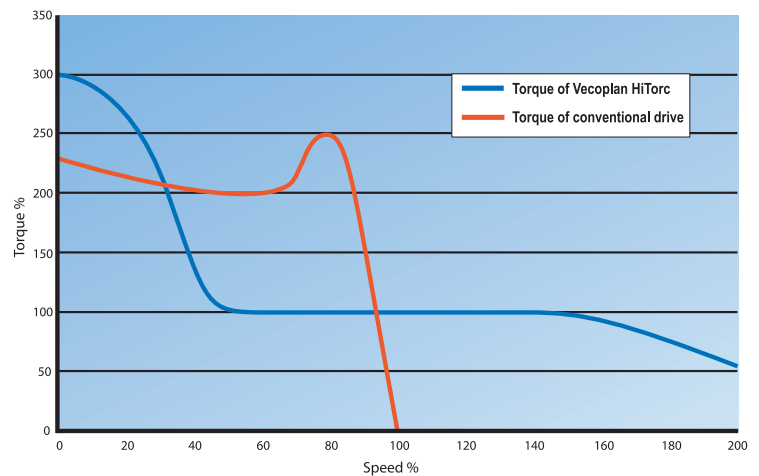
Conventional motors with variable frequency are designed simply to vary the speed of the shaft for various reasons, but varying the speed is much different than controlling the actual torque of the motor. Using a design that incorporates numerous sensors within the asynchronous motor, encoders and VFD system, applying power precisely when needed, the HiTorc™ system applies the highest possible torque over a wide speed range. This allows high torque at high RPM, thus limiting the current draw. Because high torque is achieved at higher speeds, shredder performance is greatly enhanced.

The Result:

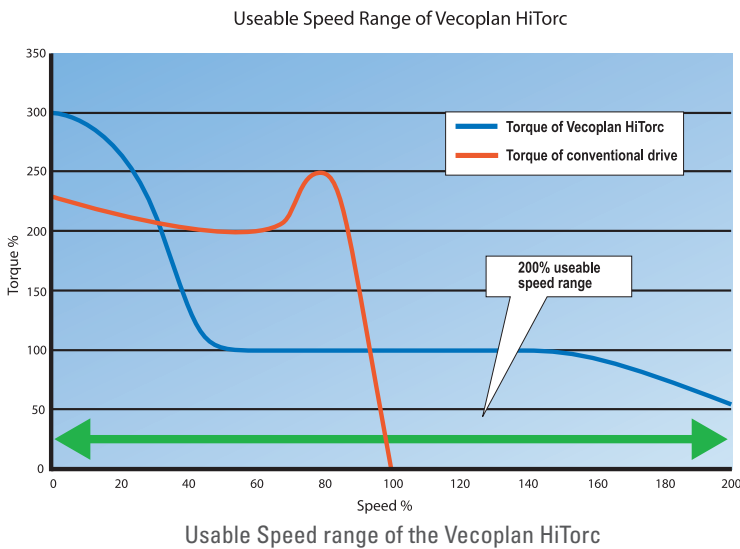
- Up to 100% Increase in Throughput vs. Conventional Drive Systems
- Up to 85% Reduction in Power Consumption / Energy Usage
- Maximum Torque Across a Wide Speed Range
- Full Speed Control with Wide Speed Range
- Quickest Possible Reversing Action
- Controlled Stop Function
- No Gearbox, Fluid Coupling or Belts to Adjust or Replace



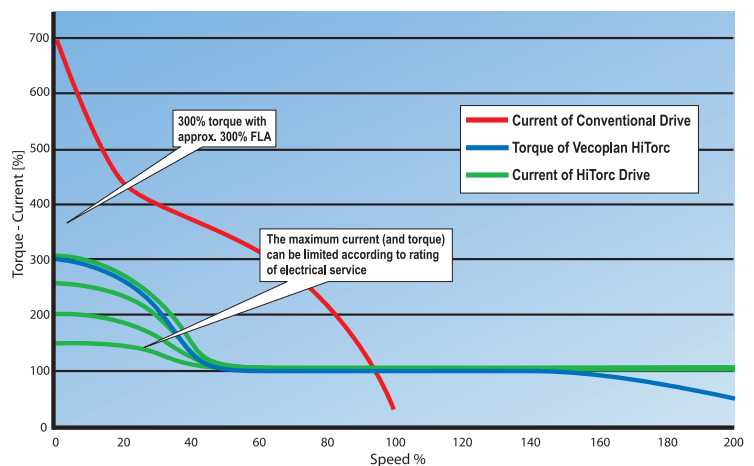
Torque Characteristics



Torque Characteristics of Conventional Drives as Compared to the Vecoplan HiTorc



Current Draw and Efficiency of Vecoplan HiTorc



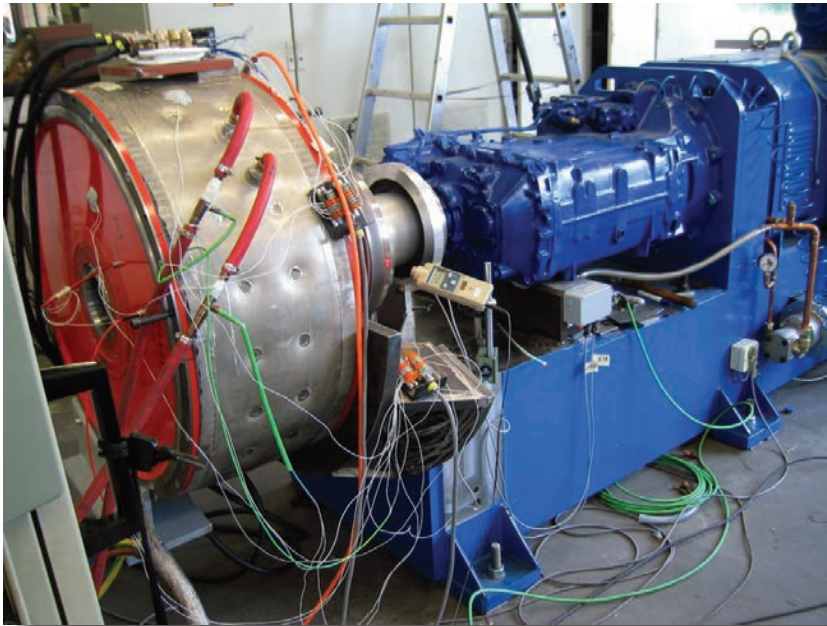
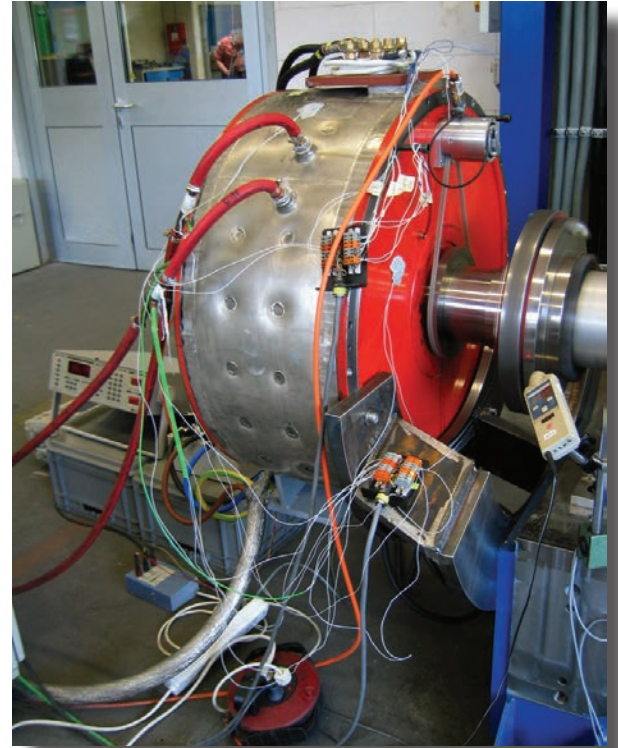
Current Draw and Efficiency of the Vecoplan HiTorc

Innovative development combined with decades of experience

Research and Development:

We took a closer look at conventional electric motors and drive systems and found several disadvantages: Poor start-up power, excessive high current draw at start-up, one fixed speed range, noisy, slow reversing action, poor efficiency ratings, maintenance intensive, and the fact that they require a gearbox, belt or shaft drive, a fluid coupling and motor.

Development of the world's first HiTorc Magnetic Pulse Drive began with the original 100HP prototype (pictured). The result was a system that gave maximum torque and power under all conditions, gave full speed control with a wide speed range, had the quickest possible reversing action with a controlled stop function, exhibited low current draw at start-up, was extremely efficient with a limited current demand, required no fluid coupling, belt or gearbox, and gave more throughput with a controlled output rate.

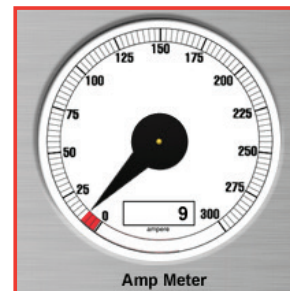


Current Draw - Another Way To Look At It:

Just how much less current draw does the HiTorc™ Magnetic Pulse Drive require? Consider this - the amp draw of the HiTorc™ when idling with no load is approximately 9 amps - a household hair dryer draws 10.43 amps. Conventional electric motors of equivalent horsepower draw approximately 48 amps - roughly 5 times more than the HiTorc™!

At start-up, conventional electric motors have a peak amp spike in excess of 1,000 amps - the peak amp spike of the HiTorc™ is below 200 amps. During normal operation under a load, the HiTorc™ asynchronous motor draws roughly 160 amps, while conventional motors require more than 250 amps!

What does this mean? Quite simply, for every hour of operation, the HiTorc™ Magnetic Pulse Drive saves between \$3.00 to \$50.00! Fewer moving parts and fewer dependent components also mean additional savings from reduced downtime and maintenance expenses!



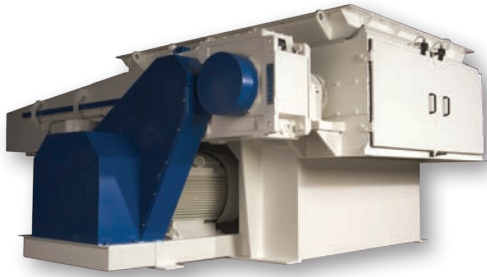
Amp load as displayed on control panel: 9 amps
Actual amp load measured inside panel: 9.3 amps



Typical amp draw of a household hair dryer: 10.43 amps

HiTorc™ - A Comparison:

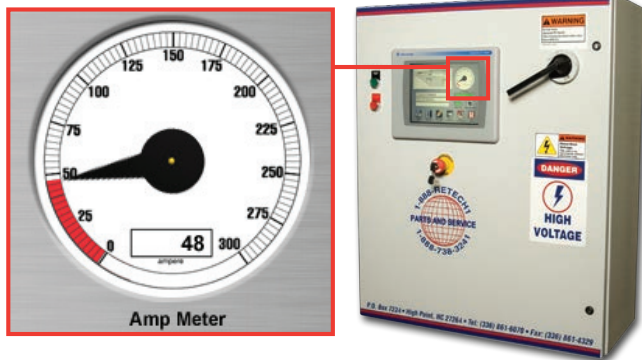
Current Draw - Machine Empty:



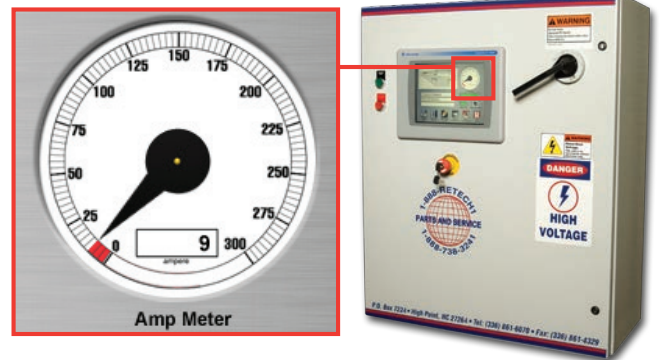
Standard Drive



HiTorc™ Drive



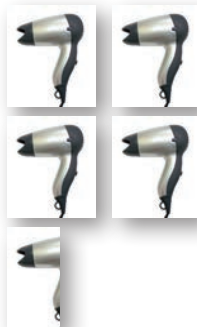
Amp Load as Displayed on Panel: 48



Amp Load as Displayed on Panel: 9



or



Actual Amp Load
Measured Inside Panel with Amp Meter:
48.1

32.57 KW



or



Actual Amp Load
Measured Inside Panel with Amp Meter:
9.3

7.04 KW

**Energy Savings: 25.53 KW
At \$0.08 per Kilowatt: \$2.04 / Hr.**

Vecoplan®

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