

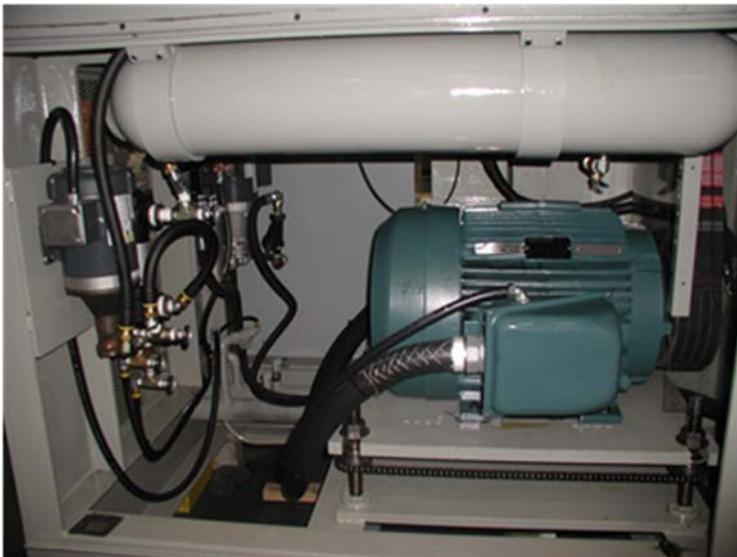
Uniloy is proud to introduce this month's web posting detailing AC Variable Frequency Drive Retrofits now available for your Uniloy blowmolding equipment. ACVF drives are available for your 250R1, and any 350R or 400R series machine. Variable frequency drive retrofits are also available for Uniloy downstream equipment such as cooling beds and impact trimmers.

The Extruder Drive

Uniloy offers two brands of Drive Controller for the extruder drive: The Rockwell Power Flex and the Yaskawa. Both drives are available in 50, 75, 100, and 125 horse power, and both are incorporated within complete comprehensive retrofit packages. The Uniloy ACVF Drive package includes all of the components needed to equip your Recip machine.

Benefits include:

- Energy savings due to higher efficiencies and power factors over the entire speed range significantly reducing operating costs.
- No water cooling eliminates the clutch cooling, clutch cooling tank, and pump. Elimination of the clutch cooling system reduces maintenance and energy costs in addition to lowering chiller system demands.
- Variable frequency drives provide quiet, smooth operation.
- Electronic overload protection helps to prevent costly motor damage and downtime.



The Impact Trimmer Drive

Impact trimmers are traditionally equipped with standard motor starters and belt sheaves sized to provide a trimmer with one speed. This means the trimmer must run faster than the blow molder and then stop and wait as the next set of bottles is loaded.

With a VF Drive, the trimmer speed can be slowed down to more closely match the machine cycle time. In some cases the trimmer dwell time can be eliminated all together making it possible to run without cycling the trimmer brake.

Benefits Include:

- Slower trimmer speeds required
- Matched machine and trimmer cycle times
- Reduced wear on brake
- Reduced wear on trimmer drive components
- Energy savings

The Cooling Bed Drive

Cooling beds are also normally equipped with only a motor starter, motor and gearbox. Cooling bed operation can be jerky and inconsistent with variation in speed and stopping position.

A VF Drive provides smoother more consistent operation with reduced wear on drive components.

Benefits Include:

- Smoother ramped starts
- More consistent stops
- Optimized speed control
- Energy savings

SELECTING THE CORRECT DRIVE FOR YOUR EXTRUDER

Step 1: Gather Pertinent Information

The following information is required in order to correctly select the optimum drive size and configuration for your application:

- Machine Serial Number
- Machine Model Number
- Electrical Schematic Number
- Number of Heads
- Maximum Gram Weight of Container with Flash
- Current Extruder Drive Type
- Current Extruder Screw Type
- Minimum Expected Cycle Time

Step 2: Calculate the Horsepower Required

The correct horsepower can be determined by inserting your operating conditions into the formula below. This formula calculates the plastic thruput requirement based on bottle weight, cycle time, and the number of heads.

$$(\# \text{ of Heads}) \times (\text{Cont. wt. w/Flash}) \times (60/\text{Cycle Time}) \times (60/454) = \text{lbs/Hour}$$

Now, choose a drive horsepower from Table 1, taking into consideration what screw type you currently have in the machine.

Example:

If you have a 350R2, 6 head machine that is running a 98 gram container with flash at a 7.5 second cycle time, then:

$$(6) \times (98) \times (60/7.5) \times (60/454) = 622 \text{ lbs/Hour is your required thruput}$$

Table 1 Maximum Thruputs

Screw Size (Dia.)	Drive Size (HP)	General Purpose (lbs/hr)	R2000 Style High Output (lbs/hr)
2.5	50	275	325
3.5	75	480	625
3.5	100	600	780
3.5	125	650	845

Based on Table 1 you could choose:

- 125hp drive with a new or existing General Purpose screw
- 75hp drive with a new or existing High Output screw
- 100hp drive with a new or existing High Output screw
- 125hp drive with a new or existing High Output screw

What you really want to know is which Drive and Screw combination is most cost effective!

Step 3: Choose the Most Cost Effective Solution

Table 2 contains annual energy consumption costs for each drive size based on plastic thruput required. This energy cost is calculated assuming 6000 hours of operation and \$0.08 per kilowatt hour.

To determine the most cost effective drive solution, find the plastic thruput requirement in the left hand column of Table 2. Follow the appropriate row across from left to right and identify the most cost effective drive horse power and screw combination by choosing the smallest dollar figure in that row.

Table 2 Annual Energy Consumption Costs

THRUPUT LBS/HR	GP SCREW				R2000 STYLE HIGH OUTPUT SCREW			
	50 HP	75 HP	100 HP	125 HP	50 HP	75 HP	100 HP	125 HP
225	\$14,371				\$12,189			
275	\$17,581				\$14,875			
300		\$15,474			\$16,257			
325		\$16,717			\$17,565			
350		\$18,038						
400		\$20,615				\$15,836		
480		\$24,746	\$23,386	\$27,270		\$19,010		
500			\$24,339	\$28,382		\$19,784		
550			\$26,771	\$31,218		\$21,762	\$20,626	
600			\$29,207	\$34,058		\$23,741	\$22,502	\$26,198
625				\$35,487		\$24,737	\$23,446	\$27,297
650				\$36,886			\$24,370	\$28,374
780							\$29,240	\$34,044
845								\$36,896

Note: The energy costs shown here for the 75, 100, and 125HP drives are calculated based on 350R extruders. The 50HP drive is utilized exclusively on the 250R1.

Back to the example

A 350R2 machine with a 6 head running a 98 gram bottle with flash at a 7.5 second cycle must produce 622 lbs/hr of plastic.

Using Table 2, you can see that a machine with a 100hp ACVF Drive and a High Output screw can produce 622 lbs/hr most efficiently. This setup would consume just under \$23,446 in drive energy compared to just under \$35,487 for the 125hp drive and general purpose screw.

Step 4: See If Your Local Power Company Will Share in Your Upgrade Cost

Many local power companies offer rebates for converting your drive components to a more efficient technology. The Uniloy package offers a Premium Efficiency motor. The following chart shows the motor efficiencies only. This information is typically required by power companies in order to consider your rebate request.

50 Hp	75 Hp	100 Hp	125 Hp
94.1%	94.5%	95.0%	95.4%

THE UNILOY ACVF DRIVE RETROFIT PACKAGES INCLUDE:

Extruder Drive Package

- Drive Controller
- Premium Efficiency Motor
- RPM and Load Meters
- Rotary Speed Potentiometer
- Door Interlock
- Mounting Materials
- Sheaves
- Motor Bushing
- Miscellaneous Seal Tight, Connectors, Wire
- OEM Technical Support of Field Proven Components
- Complete Engineering
- Installation Instructions
- Electrical Schematics

Trimmer Drive Package

- Drive Controller
- Inverter Duty Brake Motor
- Mounting Materials
- Sheaves
- Timing Belt
- Miscellaneous Seal Tight, Connectors, Wire
- OEM Technical Support of Field Proven Components
- Complete Engineering
- Installation Instructions
- Electrical Schematics

Cooling Bed Drive Package

- Drive Controller
- Inverter Duty Motor
- Mounting Materials
- Miscellaneous Seal Tight, Connectors, Wire
- OEM Technical Support of Field Proven Components
- Complete Engineering
- Installation Instructions
- Electrical Schematics

Sales and Service

For more information on these upgrades, please contact your local Uniloy Parts Sales Representative. Trained Uniloy Service Representatives are available to assist in the installation of these packages at your facility.