

Plastic Extruders

Nidec variable speed solution delivers up to 33% energy savings



Extruders are commonly used in rubber and plastic product manufacturing as well as food processing industries. Historically, plastics manufacturers have used DC motors to power extruders while some turned to larger traditional AC induction motors.

With today's focus on bottom-line results, manufacturers are increasingly looking to reduce high energy costs, increase output capacity and reliability. Control Techniques offers a variable speed solution to address these concerns using Leroy-Somer DYNEO® LSRPM high efficiency permanent magnet motors and Control Techniques Unidrive M variable frequency drives (VFDs).

The Control Techniques' drive/motor package addresses the needs of the extruder end user by providing a variable speed option. This allows for the extrusion of a variety of materials through a variety of dies thus increasing the flexibility of the extruder system all while providing optimum energy savings. As the speed setting decreases, the energy savings increases (see table, left).

For current AC drive users, the Control Techniques' solution provides added energy efficiency and output optimization. For DC drive users, the solution can provide the same results by replacing existing DC motors without having to change the extruder system configuration.

Proven Energy Savings

In direct comparison tests between the Control Techniques' solution and a NEMA Premium® efficiency induction inverter duty motor, the Control Techniques' solution outperformed the induction motor in energy consumption throughout the entire speed range (see table, left).

Speed % Set Point	Motor RPM	NEMA Premium Induction Motor Power (kW)	Nidec Industrial Automation Permanent Magnet Motor Power (kW)	Difference (kW)	% Reduction
5	90	1.88	1.27	0.60	33
10	180	4.16	3.08	1.07	25
25	450	14.62	13.01	1.61	11
50	900	41.30	37.41	3.89	9
75	1350	70.00	65.04	4.96	7
100	1800	102.72	95.21	7.51	7

Extruder Solutions

Permanent Magnet Technology

By reducing rotor losses, the patented radial magnet rotor technology greatly improves the drive's system efficiency and improves the machine's footprint. With the LSRPM series motors, this innovative technology is now available in an IP 55 mechanism (TEFC equivalent), the most commonly used throughout the industry.

Energy Efficiency

At the equivalent rated speed, LSRPM motors in the DYNEO range have significantly better efficiency than high-efficiency induction motors. This difference in efficiency becomes even more significant when operating below this rated speed, which is by definition the case in variable speed applications!

Unidrive M Enhanced Motor Control

The new Unidrive M high performance motor drive is designed to work directly with LSRPM permanent magnet motors. The resulting motor control package combines the high efficiency inherent in permanent magnet synchronous motors with the efficiency of variable frequency drive technology for optimized uptime, throughput and energy savings in extruder and other manufacturing applications.

The Unidrive M delivers a robust design for long productive operation including:

- Conformal coating for enhanced environmental protection
- Built-in power reactors that also reduce harmonics
- Built-in EMC filters to prevent interference with sensitive equipment

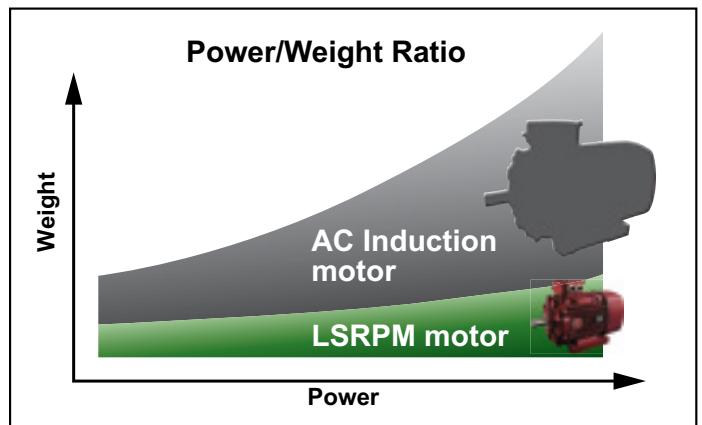
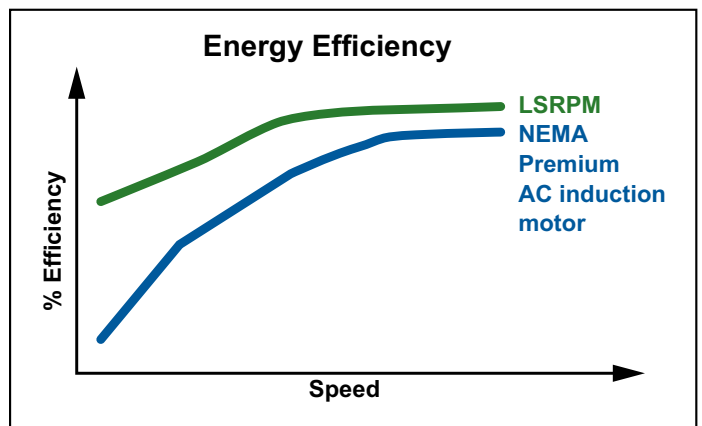
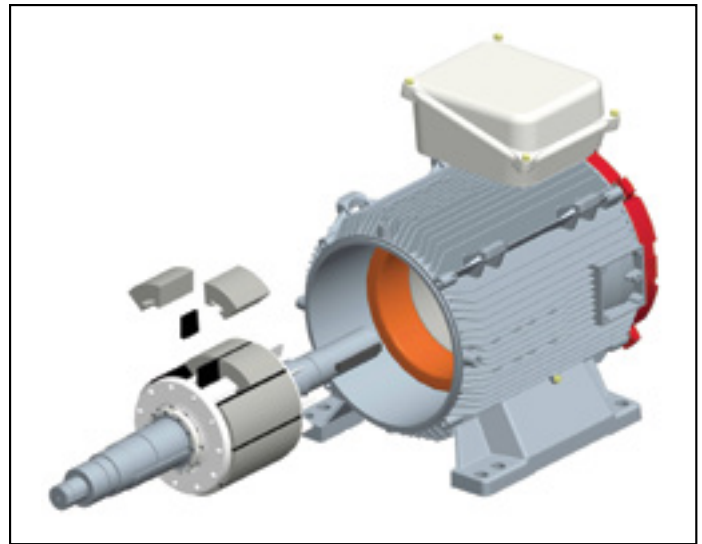
Onboard intelligence for extruder control that:

- Protects the extruder screw
- Adapts easily to existing control systems
- Connects to any industrial network

The Control Techniques' solution provides plastics manufacturers with optimum energy savings while giving them the flexibility of using a variety of materials and dies.

World Class Products & Support

- Assistance estimating energy savings
- Worldwide Application & Field Service Network
- 24/7 support line +1 800 893-2321



Unidrive M AC Drives
to 4,200 HP (2.8 MW)



DYNEO LSRPM
Permanent Magnet Motor
to 750 HP (600 kW)