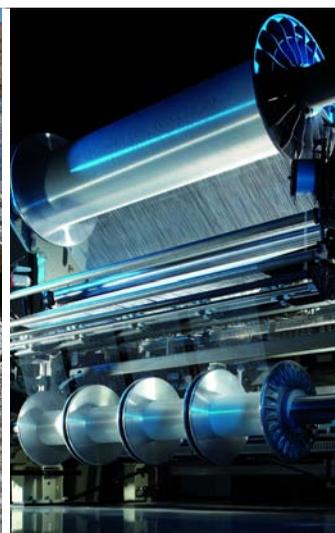


Nidec

All for dreams



INDUSTRIAL SOLUTIONS

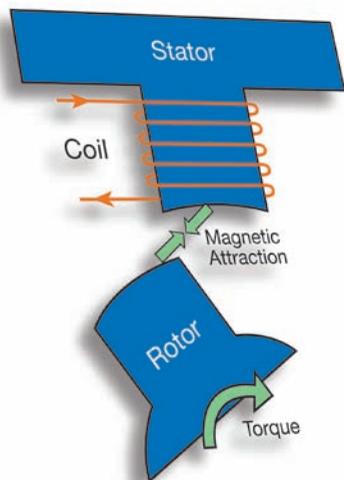
Industrial Switched Reluctance Motors and Drives

How Does Switched Reluctance "SR" Work?



It's Simple - Magnetic Attraction

- Current flowing in the coil windings establishes a magnetic field between the stator and rotor poles
- Magnetic attraction pulls the rotor poles toward the stator poles
- Hence torque and rotation are produced
- By optimizing the timing and current level with both torque and speed, the SR machine is highly efficient over a wide range of conditions as a motor or generator



SR Motor Basics

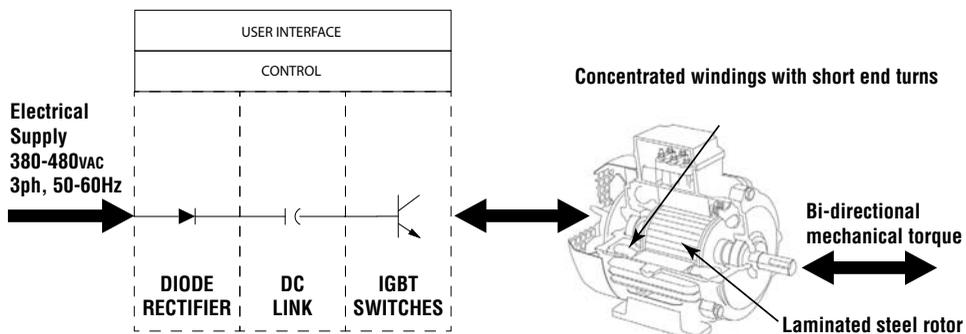
- Energizing a stator coil as the rotor and stator poles are approaching = motoring torque
- Energizing a stator coil as the rotor and stator poles are separating = braking torque
- Rotation is produced by sequentially energizing sets of stator coils
- Direction is controlled by reversing the energizing sequence
- Coil current flow is always in the same direction (unipolar)

What is an SR Drive System?

SR Drive systems contain both a motor and a power converter. The power converter contains bus capacitors, solid state switches and signal processing electronics matched to the motor. Similar in many ways to a traditional inverter, it takes power from the AC line, rectifies it to a DC bus, and then steers it to the motor windings to control torque and speed.

Finding a Solution

The combination of a drive from SR Drives® and a U.S. MOTORS® brand switched reluctance motor, creates a system that can be used across a wide range of applications to take advantage of this technology.



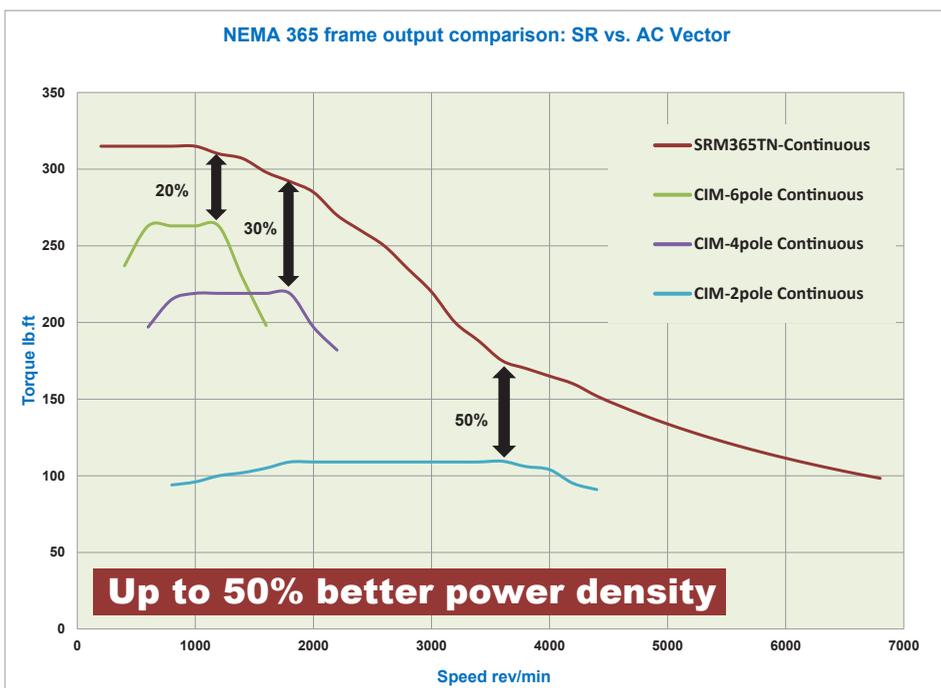
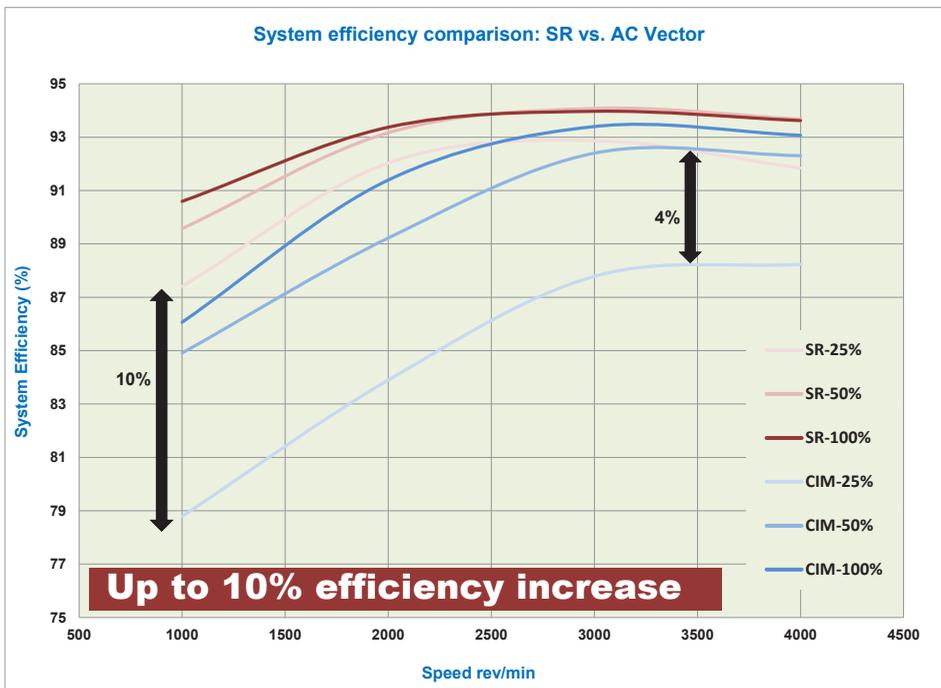
Switched Reluctance Systems Are Changing the Game



The compact, straightforward construction of the SR motor makes it very easy to integrate within an existing product. OEMs use this feature to enable direct-drive or integrated motor solutions. This results in smaller, simpler, more reliable products.

Industrial Switched Reluctance Systems Achieve IE4 Efficiency Levels

SR Drives® and Nidec Motor Corporation have designed a switched reluctance system that operates at a very high efficiency across their entire load range. This enables substantial energy savings in applications which spend significant portions of their operation either at part load, or above or below base speed.



SR Drive System Features and Benefits

- High overload capability means **no upsizing required, lower cost solution**
- Short end-turns mean **high torque density, reduced size**
- No brushes, windings, rotor bars, or end rings mean **excellent tolerance to harsh environments**
- Low copper usage, high efficiency, and no rare-earth magnets mean **this is a “Green” technology**
- Absence of rotor IR losses **reduces shaft temperatures and prolongs bearing life**
- No winding overlap **reduces risk of insulation failure**
- Simple laminated steel rotor means **high speed capability**
- Motor & drive phases are independent resulting in **highly fault tolerant topology**
- Motor coils are individually wound and inserted, **making replacement simple**



SR Drives® features and options

- Universal supply voltage 380-480VAC ±10%, 50/60Hz
- UL 508C, CSA C22.2 and CE approvals
- NEMA 1, Force ventilated enclosure STD
- Comprehensive diagnostics via on-board display
- Dynamic brake chopper option
- Braking resistor options
- Door mounted disconnect option

U.S. MOTORS® brand switched reluctance motor features and options

- Cast iron TEFC frames
- Standard Corro-Duty construction
- IP55 environmental rating
- Class H insulation
- 110%, 150% or 250% overload options
- IE4 compatible efficiency
- Flange mount options
- High speed operation up to 6750 RPM

NEMA	Rated Power (hp)																
	15	20	25	30	40	50	60	75	100	125	150	200	250	300	350	400	500
SRM256TN		20-40 HP															
SRM286TN			25-55 HP														
SRM326TN				40-80 HP													
SRM365TN						60-130 HP											
SRM405TN								80-170 HP									
SRM447TN										120-250 HP							
SRM449TN												215-420 HP					

Base speed options: 1000 / 1800 / 3600 / 4500 rpm

www.usmotors.com/our-products/switched-reluctance.aspx

Nidec SR Drives Ltd.
 East Park House
 Otley Road, Harrogate, HG3 1PR, UK
 Tel: +44 (0) 1423 845200
 Fax: +44 (0) 1423 845201
 Email: nmutcinfo@nidec-motor.com

Nidec Avtron Automation Corporation
 7555 East Pleasant Valley Road, Bldg 100
 Independence Ohio, 44131
 Tel: (216) 642-1230
 Fax: (216) 642-6037
 Email: srinfo@nidec-avtron.com

Nidec Motor Corporation
 8050 West Florissant Avenue
 St. Louis, MO 63136
 Tel: (888) 637-7333
 Fax: (314) 595-8447
 Email: <http://www.usmotors.com/Contact-Information.aspx>

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