

# IMfinity®

## High reliability induction motor range

**Variable speed and fixed speed**

**IE2 High efficiency, premium IE3, super premium IE4 efficiency motors**

Non IE for special use

Frame size 80 to 500

0.75 to 1500 kW

**LEROY-SOMER™**

**Nidec**  
— All for dreams

# IMfinity®

# Outstanding motor range

## IMfinity® platform, the highest standards to meet your expectations

As part of Nidec, Leroy-Somer has operated globally for many years, each providing unparalleled specialist drives and motors technology, expertise and customer care in a wide range of industries. Our quality products with renowned reliability, automation knowledge and technical support have helped our customers meet and exceed their own requirements.

IMfinity® is the new range of induction motor developed by Leroy-Somer to offer the highest standards to satisfy customer expectations:

- **High reliability**
  - Robust housing, with cast iron flange for DE and NDE bearing providing better operation (frame size > 90 mm)
  - Advanced mechanical and electrical design (magnetic core optimization, high grade components, high quality machining and winding process)
- **Express availability**
  - Very short delivery time with a dedicated organization for supplying motors, brake-motors and geared-motors
  - Worldwide usage of standard motors: multi-voltage/multi-frequency, international compliance
- **Energy savings**
  - Fixed speed: Premium IE3 and super premium IE4 efficiency motors
  - Variable speed: Easy to use, high performance motor and drive package for better energy savings



# IMfinity®

## Impressive advanced technology

Our advanced drives and motors technology and automation solutions are designed by focusing on maximizing energy savings across a wide range of industries, enhancing performance and optimizing productivity.

New regulations define the minimum efficiency level of the motor but more and more variable speed systems made from motor and drive solutions are considered as the most effective combination to generate the highest energy savings.

The new IMfinity® range of motors are developed to offer benefits from state of the art reliability and efficiency, giving customer the choice for an easy-to-select and easy-to-install solution.

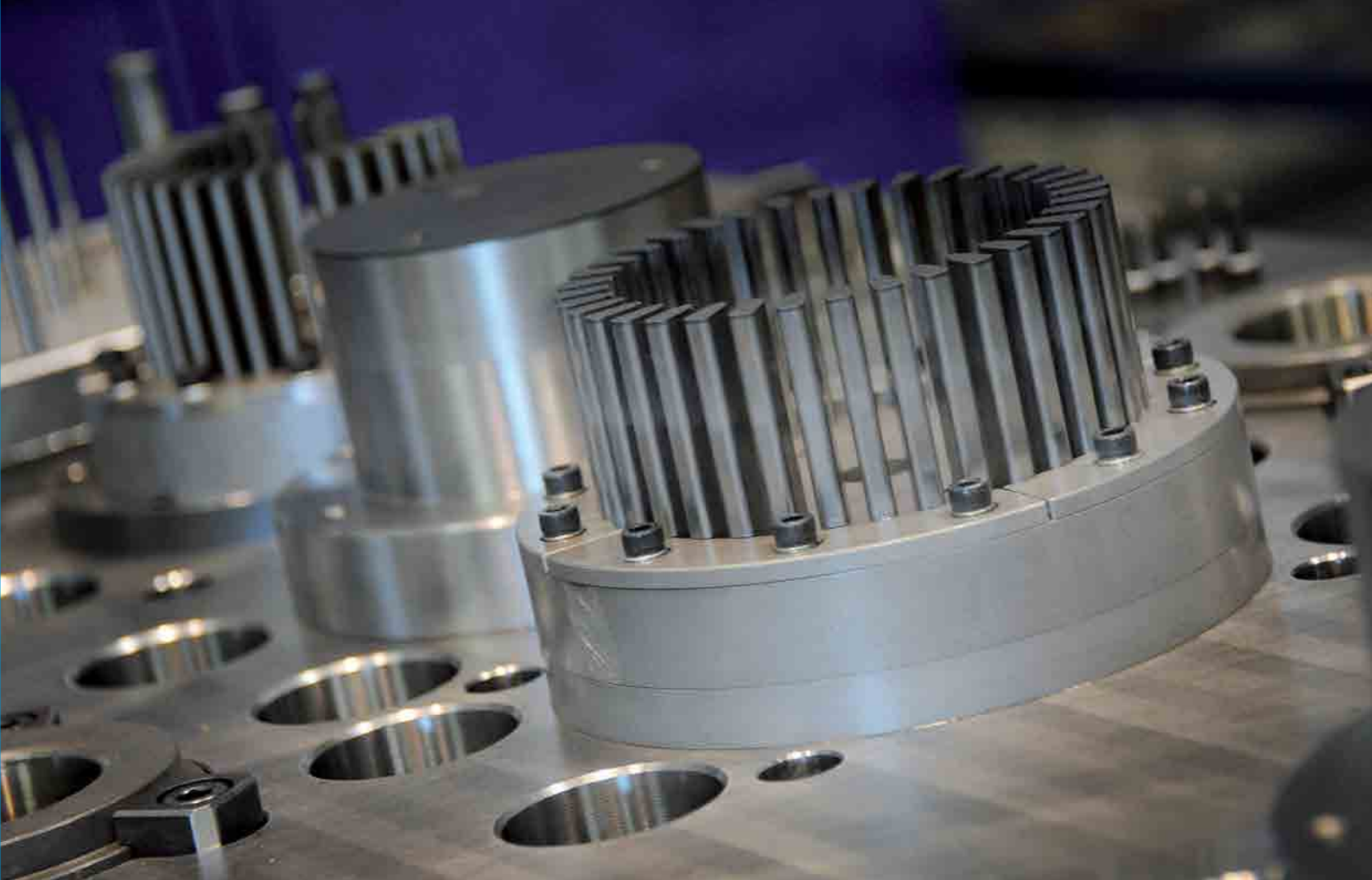
Fixed speed  
IE3



Variable speed  
IE2 + Drive



A range of IE4 motors is available for variable and fixed speed, to optimize the energy efficiency.



## Benefit from state of the art reliability and efficiency

	Performance	Reliability	Availability	Selection	Installation
<b>Construction &amp; Design</b>					
Magnetic circuit optimization	+	+			
Air gap optimization	+	+			
Low losses steel lamination	+	+			
Enhanced slot filling	+	+			
Component rationalization			+	+	+
Robust mechanical parts	+	+			+
High quality components	+	+			
<b>Characteristics</b>					
Reduced starting current	+	+			+
Multi-voltages & frequencies			+	+	+
IE2, IE3, IE4 and non IE efficiency levels	+				
<b>Variable speed usage</b>					
Fully characterized	+	+	+	+	+

# IMfinity®

## World-class compatibility

### One unique motor covering 80% of worldwide needs:

- Easier to select
- Easier to source & better availability
- Easier to use
- Stock reduction for OEM

There is a proliferation of energy regulations across the world and new ones are currently being drafted. Since April 2015, Japan has imposed regulations and it is highly likely that other countries such as India, Taiwan, etc will do the same. It is therefore increasingly difficult to choose a motor which complies with all these regulations on the market.

A further issue is the difficulty caused by different voltages and frequencies in the various geographical zones, along with the problem of efficiency classes.

The new IMfinity® motor range is one of the exceptions on the market which can guarantee efficiency levels for the main voltages and frequencies covering at least 80% of power supplies throughout the world, while complying with existing or future energy regulations: One single motor type from the new generation of IMfinity® induction motors is sufficient, where 4 or 5 were needed previously.

IMfinity® IE3 nameplate

The image shows a black nameplate for a Nidec Leroy-Somer motor. It contains technical specifications and efficiency data. Two orange arrows point to specific parts of the plate: one points to the table of voltage and frequency characteristics, and the other points to the efficiency and regulatory compliance logos.

Ta 40°C		Ins.Cl		F		S1		1000n 164kg	
DE: 6312 ZZ C3		NDE: 6312 ZZ C3							
V	Hz	min-1	kW	cosφ	A				
Δ 380	50	1455	30	0.85	57.8				
Δ 400	50	1460	30	0.83	56.5				
Δ 415	50	1460	30	0.83	56.3				
Δ 440	60	1770	30	0.82	49.6				

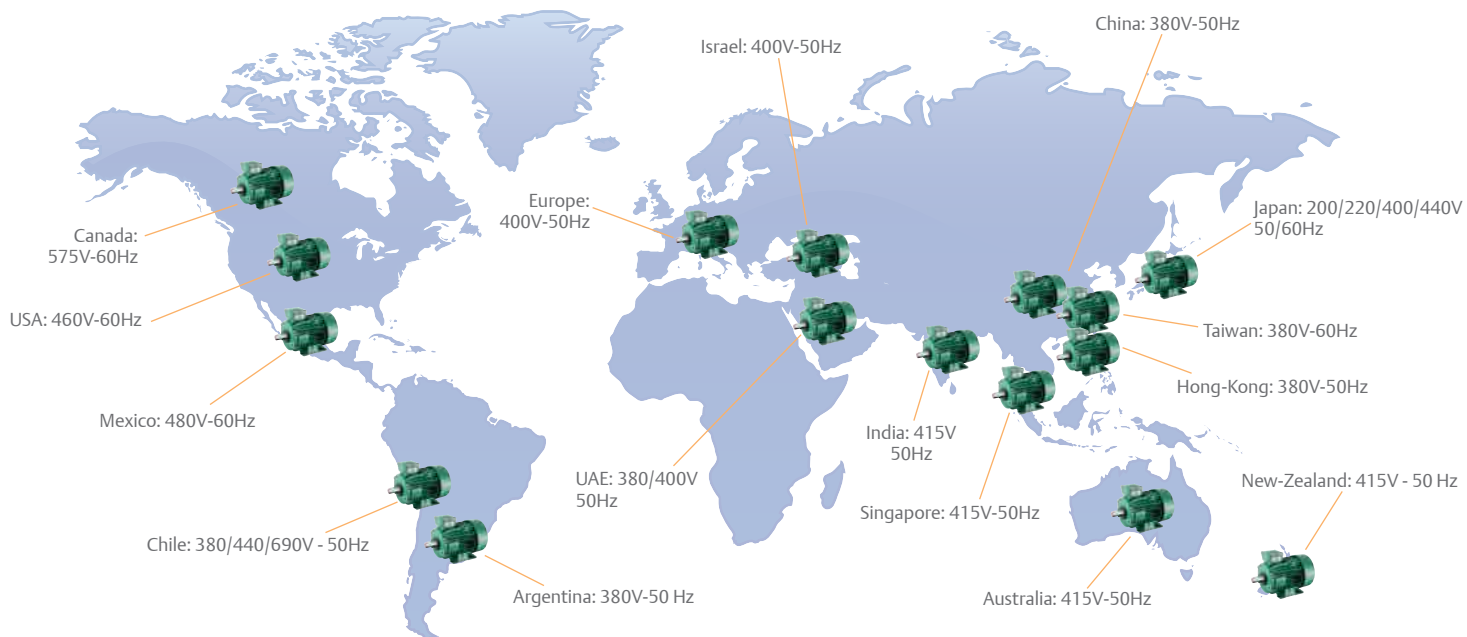
Additional text on the nameplate includes: Nidec, Leroy-Somer, 3~LSES200LU, T, 2014, N° 789456 F14 001 (P55 IK08), IE3, 93.6% NEMA Norm Eff, 94.1% NEMA Premium, CEA, C1A, C1S, E88934-R, K500F\_500, and a CE mark.

Multi voltages  
& frequencies  
characteristics

Complies with the  
regulations of the  
USA and Canada



## IMfinity® expand your perspectives



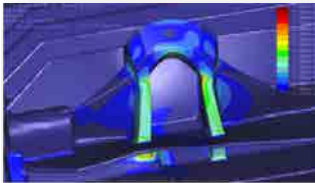


# IMfinity®

## Designed to last

### Mechanically robust

- Robust design based on simulation and test
- Robust cast iron end shields (even for aluminum motors)
- Machining of complete stator on mandrel to ensure perfect concentricity from magnetic axis of the motor
- Rigorous balancing provides a reduced level of vibration

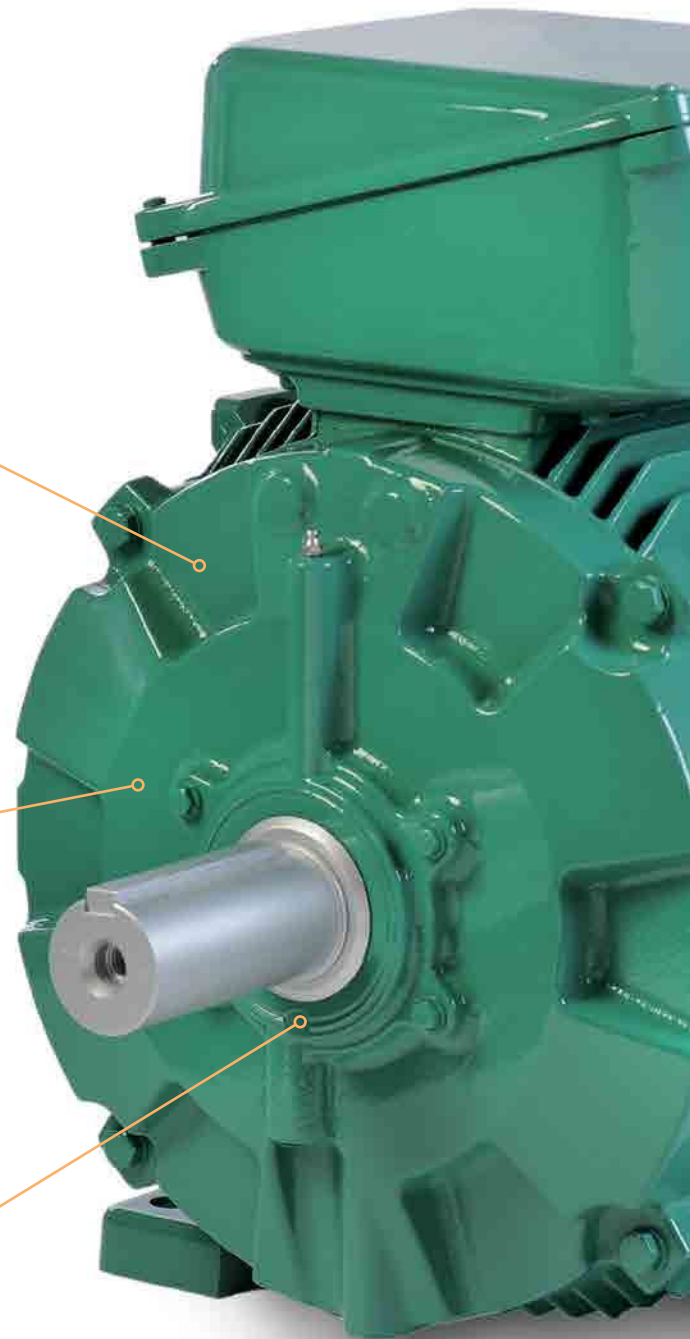


### Approved sealing

- IP55 Sealing system approved by an independent and qualified laboratory
- Low energy losses shaft sealing

### Extended bearing life time

- Properly sized bearing to accept high shaft load
- High quality grease for a long service life and spaced greasing intervals





## Electrical safety

- Large terminal box for an easier and safer access to connection

## Optimized characteristics

- Magnetic circuit optimized to match IE2, IE3, IE4 and non IE classes
- Reduced  $I_d/I_n$
- Designed and characterized for use with inverter or direct-on-line

## Thermal protection

- PTC sensors included for frames  $\geq 160$  mm
- Optional types available with short lead time

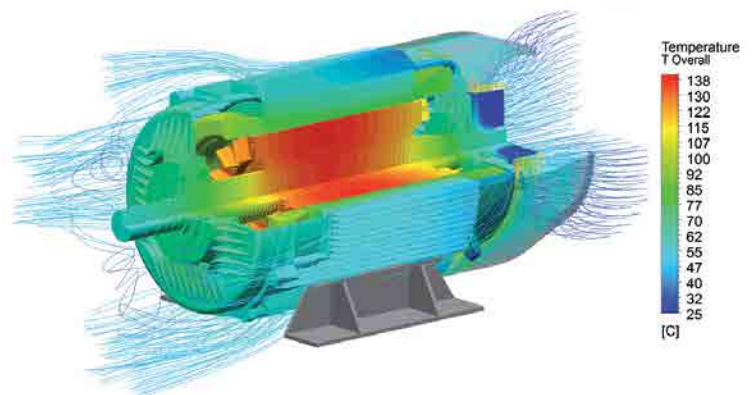
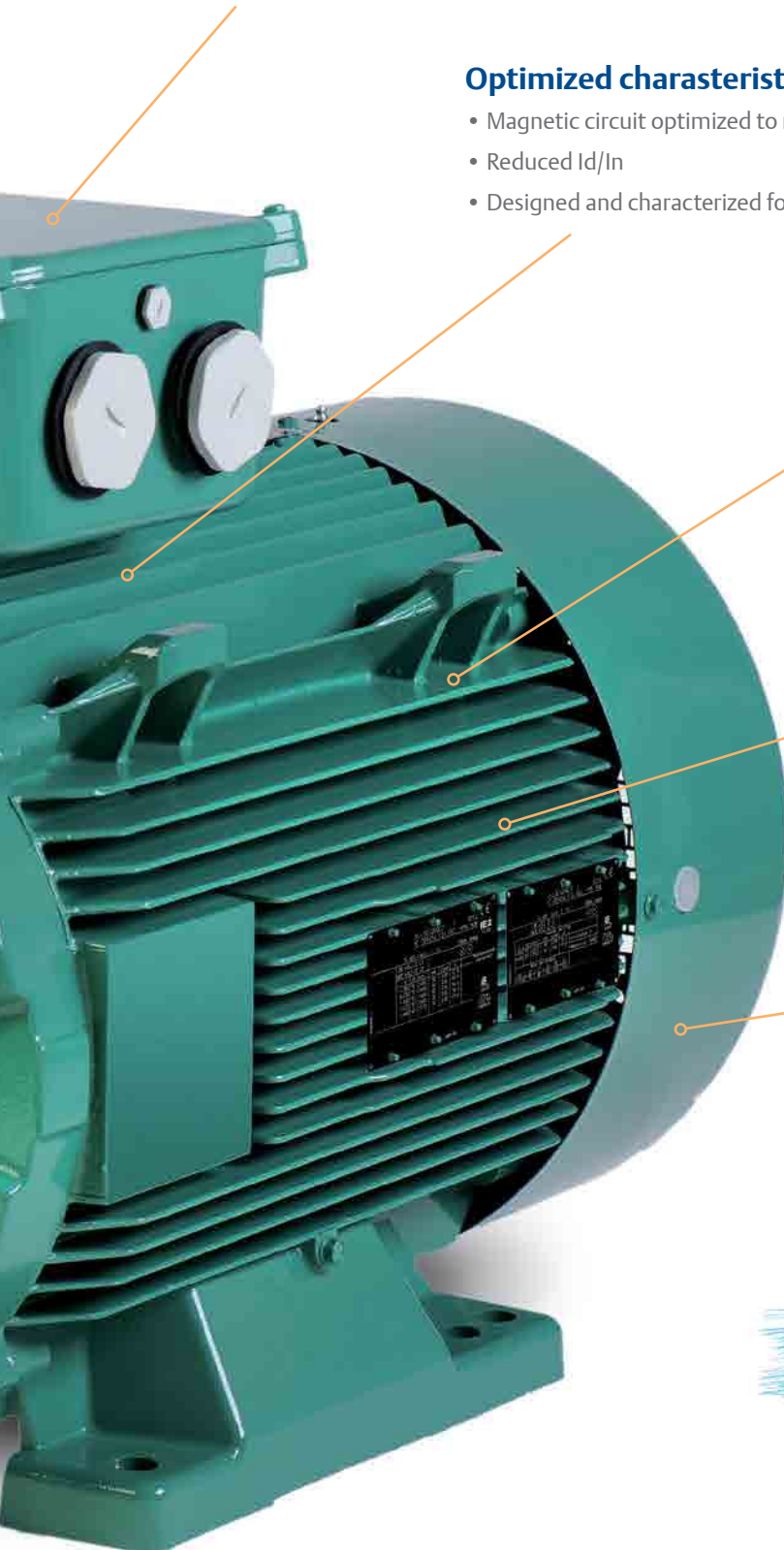
## Electrically robust

- Dedicated options for variable speed use:
  - reinforced insulated winding system
  - insulated bearings
- Impregnation varnish without solvent
- Designed with 25K thermal reserve

## Enhanced cooling

Full optimization of motor cooling:

- to reduce losses
- to prevent hot spots inside winding and bearings
- to keep low noise level



# IMfinity®

## Powerful versatility

IMfinity® motors are available in several different construction variants and finishes to meet the varied requirements of applications on the market. Whether for manufacturing with constraints on the load factor, cycle profile, productivity, etc, or for processes with harsh operating conditions and environments, there is an IMfinity motor that fits the bill.

### Typical industries:

Food & Beverage

Packaging

Printing

Plastics & Rubber

Port Logistics

Test Rigs

Textile



Glass

Industrial Refrigeration

Marine

Metals

Mines, Quarries, Cement

Nuclear power

Water

Oil & Gas



## The widest range of motors and combinations adapted to the various needs of industries and applications

The IMfinity® motor ranges (aluminium, cast iron, IP23 drip-proof and liquid cooled frames) are designed to allow a large combination of adaptations, such as gearboxes, brakes, speed feedback (encoders), forced ventilation units, etc.

All of these motors, with or without special adaptation, are designed to work with variable speed drives, such as the Unidrive M & Powerdrive ranges.

## Global guarantee from a single manufacturer

The combination of a motor-drive package made by a single manufacturer ensures excellent performance of components designed for optimum operation, backed up by a comprehensive warranty from a single source.

### IMfinity® platform



**LS**  
Non IE  
Aluminium IP55  
Frame size 56 up to 225 mm  
2, 4 & 6 poles  
0.09 up to 45 kW



**LSES**  
IE2 - IE3  
Aluminium IP55  
Frame size 80 up to 315 mm  
2, 4 & 6 poles  
0.75 up to 200 kW



**FLSES**  
IE2 - IE3 - IE4  
Cast iron IP55  
Frame size 80 up to 450 mm  
2, 4 & 6 poles  
0.75 up to 900 kW



**PLSES**  
IE2 - IE3  
ODP / IP23  
Frame size 225 up to 450 mm  
2, 4 & 6 poles  
55 up to 900 kW



**LC**  
IE3  
Liquid cooled / IP55  
Frame size 315 up to 500 mm  
2, 4 & 6 poles  
150 up to 1500 kW

### Geared motors



**Compabloc**  
up to 14,500 Nm



**Orthobloc**  
up to 23,000 Nm



**Manubloc**  
up to 14,500 Nm

### Brake motors



**FFB** from 0.12 to 22 kW



**FCPL** from 37 to 400 kW

### Drives



**Unidrive M**  
0.25 to 2.8 MW



**Powerdrive F300**  
1.1 to 200 kW



**Powerdrive MD2**  
45 kW to 2.8 MW



**Varmeca**  
Built-in variable  
speed drive  
0.25 to 11 kW

# IE2 IMfinity® + Drive

## Compliant, cost-effective, guaranteed performance

The implementing regulation of the European directive allows for the possibility of combining a variable speed drive with an IE2 motor as an alternative to replacing it with a fixed-speed IE3 motor.

In addition to ensuring installation compliance, choosing to convert to variable speed can also generate immediate operating profits thanks to:

- Energy savings of up to 50% depending on the application and operating conditions
- Reduced cost of maintenance on the mechanical control components
- Better productivity as a result of improving the process and reducing machine downtime



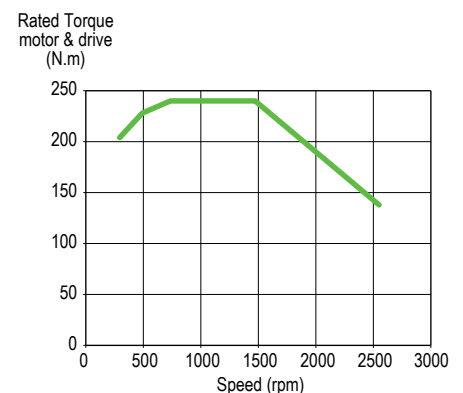
### IE2 IMfinity® + drive: tested, guaranteed performance

Using a drive on an induction motor improves its performance compared to operation on the mains.

The whole IMfinity range of motor-drive units have been tested over the entire speed range, so as to determine precisely the torque and efficiency characteristics available.

These characteristics are made available to manufacturers, integrators and users, in order to optimise the size of the motor-drive unit whilst still ensuring excellent results:

- Torque/speed curves and characteristics available in the technical catalogue
- The configurator, a tool to assist selection of the motor-drive unit, suggests the most suitable combination for the desired operation
- Drive parameter settings and performance indicated on the variable speed nameplate and added to the mains rating plate.







## Variable speed options

As an answer to the majority of cases, the IMfinity offer has been designed integrating specific features as standard:

- Standard PTC sensors
- Thermal reserve for maintaining the rated torque over an extended speed range
- Adaptation of the metal support plate to reduce electromagnetic noise

However, to meet particular requirements, options available on short delivery can be provided:

- Winding insulation and insulated bearing for mains voltages  $\geq 480$  V, long cable lengths and frequent operation during the braking phase
- Forced ventilation unit for availability of the rated torque at very low speeds

## An adapted drive offer

**Unidrive M:** range of drives and solutions designed for industrial applications which require dynamic performance without compromising safety.

**Powerdrive:** range of drives and solutions adapted to process applications, prioritising integration in existing installations and energy savings.

Nidec		3x-1.5ES200L1		2014		CE	
LENOY-SODER		N° 789456 F14 001		IP55 1408		IE2	
Ta 40°C Ins Cl F S1		1000m 1408					
U	V	50	230	50	230	50	230
I	A	5.0	14.55	5.0	14.55	5.0	14.55
P	W	1.5	1.5	1.5	1.5	1.5	1.5
η	%	87	87	87	87	87	87
cos φ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85

Nidec		3x-1.5ES200L1		2014		CE	
LENOY-SODER		N° 789456 F14 001		IP55 1408		IE2	
Ta 40°C Ins Cl F S1		1000m 1408					
U	V	50	230	50	230	50	230
I	A	5.0	14.55	5.0	14.55	5.0	14.55
P	W	1.5	1.5	1.5	1.5	1.5	1.5
η	%	87	87	87	87	87	87
cos φ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85
λ		0.85	0.85	0.85	0.85	0.85	0.85

# Drives & Motors services

## Customized local services and round-the-clock support



- Audit and consultation
- Industry leading install base audits
- Optimizing energy savings and payback
- Retrofit and system upgrades
- Installation and commissioning
- Comprehensive training
- Maintenance
- Global facilities and resources





## A strong union that benefits all our customers

Through our integrated organization, we have an enhanced global presence with 5,500 employees. Our combined local support & services provide:

 5,500 employees



### 40+ Automation Centers

Providing excellent customer support for any product, automation solutions or service requirements



### 23 Manufacturing sites

Producing a comprehensive range of high quality products, optimized for industry-specific customer requirements



### 8 Engineering and Design facilities

Develops market leading products and feature-sets using the latest design technology



### 3 Regional despatch hubs

For quick delivery of product

Our extensive sales and service networks in Europe, Asia Pacific and the Americas are backed-up by hundreds of carefully selected distributors and service partners, often in remote locations, all over the world.



Note that many countries have more than one of the facilities represented by the icons  
Services are optimized on a country-by-country basis, so please contact your local sales contact for full details of our local offering.

# Express availability

## Boost and secure productivity

IMfinity® motors are a full part of our global logistic organization, offering very short lead times on many combinations. Express availability offers very quick reactivity to customer requirements, while boosting and securing their productivity:

- to benefit quickly from energy savings
- to help ensure continuity of production
- to minimize spares required on site

Most standard models from the IMfinity® range of motors can be shipped on the same day for any orders placed before 11.30 am. A wide variety of motors with options are available in 2 or 10 working days, such as:

- Mechanical adaptations: foot and flange mounting, roller bearings, drip cover, stainless steel nameplate, etc
- Electrical adaptations: 400 V winding (star connection) for motors rated  $\geq 7.5$  kW, non-PTC sensors fitted, etc
- Adaptations for variable speed particular conditions (Main power voltage  $> 480$ V, long cable, ...): insulated bearings, reinforced insulation, forced ventilation unit, etc
- Geared motors with various different combinations (helical in-line, right angle, parallel shaft or worm) and options.

The wide variety of products, options and combinations available from Express Availability (motors, geared-motors and drives) covers the majority of application and industry needs.



Catalogue extract:

## Express availability - Induction motors

### LSES - IMfinity®

High-efficiency three-phase motors with aluminium housing  
Class IE3

#### SHIPMENT FROM FRENCH FACTORY, IN WORKING DAYS

Orders received, within the maximum quantity limit, by the factory on day D before 11.30 am French local time are written in this grid. If the order is received after 11.30 am add 1 working day for the shipment. For products with options, the shipping time will be the longest shipping time indicated for any of the components. Above the maximum quantity, please consult your sales office.

D	D + 2	D + 10	Please consult
---	-------	--------	----------------

4 poles  
1500 min<sup>-1</sup>

380 V Δ / 400 V Δ / 415 V Δ / 690 V Y 50 Hz - 460 V Δ 60 Hz											
Type	Rated power at 50/60 Hz	IM 1001 (IM B3)		IM 3001 <sup>(1)</sup> (IM B5)		IM 2001 <sup>(1)</sup> (IM B35)		IM 3601 <sup>(1)</sup> (IM B14)		IM 2101 <sup>(1)</sup> (IM B34)	
		P <sub>N</sub> kW	Code	Max. qty	maxi	Max. qty	Code	Max. qty	Code	Max. qty	Code
LSES 132 MU	7.5	4910776	5	4910777	5	4910778	1	4910780	1	4910781	1
LSES 160 MR	9	4910789	2	4910790	2	4910791	1	4910793	1	4910794	1
LSES 160 M	11	4910800	2	4910801	2	4910802	1				
LSES 160 LUR	15	4910811	2	4910812	2	4910813	2				
LSES 180 M	18.5	4910816	2	4910819	2	4910820	2				
LSES 180 LUR	22	4910825	2	4910826	2	4910827	2				
LSES 200 LU	30	4910832	2	4910833	1	4910834	2				
LSES 225 SR	37	4918552	2	4918553	1	4918554	2				
LSES 225 MG	45	4910839	2	4910840	1	4910841	2				
LSES 250 ME	55	4910846	1			4910848	1				
LSES 280 SD	75	4910852	1			4910854	1				
LSES 280 MD	90	4910858	1			4910860	1				
LSES 315 SP	110	4910864	1			4910866	1				
LSES 315 MP	132	4910870	1			4910872	1				
LSES 315 MP	160	4910876	1			4910878	1				
LSES 315 MR	200	4910882	1			4910884	1				

# IMfinity®

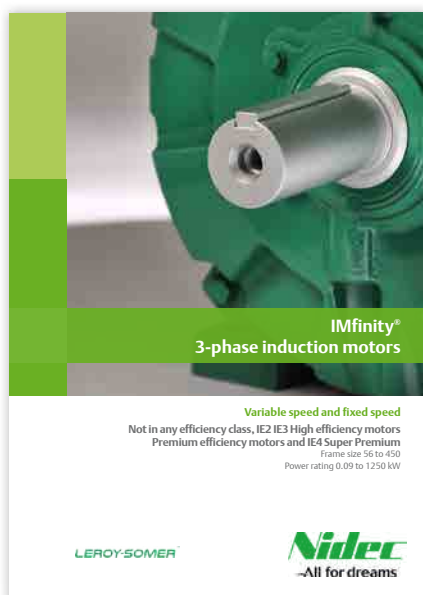
## Make it your own

IMfinity motors and geared motors fully comply with new regulations on efficiency and are tailored for variable speed and fixed speed operation. Powerful tools have been developed or adapted to help choose the right combination of motor and drive package or motor direct-on-line.

### Motor technical catalogue

This catalogue contains in one single volume all the aluminum, cast iron IP55 and drip-proof IP23 motor ranges, with efficiency classes IE2, IE3, IE4 and NIE. For each efficiency class, performances are given when power is supplied to the drive or direct-on-line.

In addition to mechanical/electrical performance and dimensions, the IMfinity® catalogue provides information about regulations and motor markings in the different countries of the world.



A dedicated guide is available for more information about new versions of the IEC standards and new projects currently in preparation, European directives and their updates as well as future regulations currently in preparation.

## Configurator

Configurator is a powerful tool to assist in the selection of motors or geared motors combined with variable speed drives. Continuous evolution of this software reaches a new level with IMfinity motors and geared motors, giving the user the possibility to link-up the motor and drive selection.

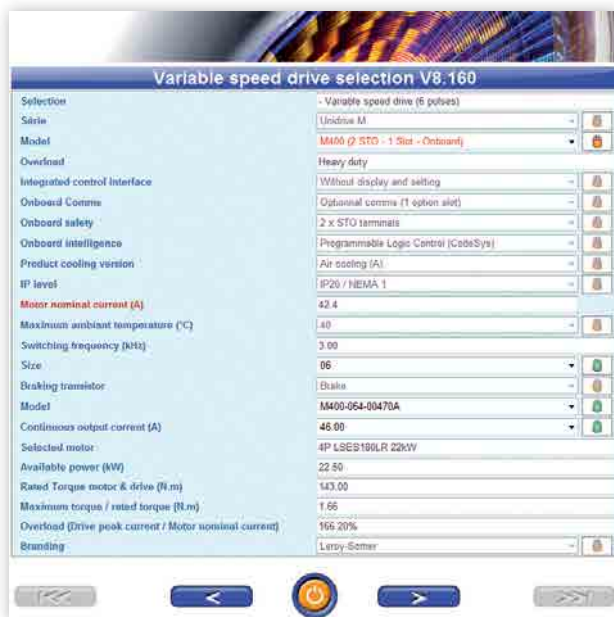
Best-in-class motors, geared motors and drives combined with this advanced tool ensure the best association is made when selecting products.



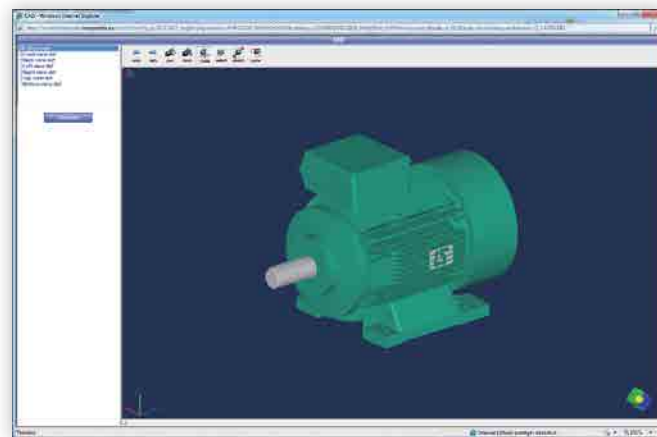
Environment selection



Motor selection



Drive selection, linked to motor selection



CAD files for motors (2D, 3D)



Motor + Drive package characteristics

**LEROY-SOMER™**

[www.nidecautomation.com](http://www.nidecautomation.com)

**Connect with us at:**

[twitter.com/ctandls](https://twitter.com/ctandls)

[facebook.com/ctandls](https://facebook.com/ctandls)

[youtube.com/controltechniquesandleroy-somer](https://youtube.com/controltechniquesandleroy-somer)

[theautomationengineer.com](http://theautomationengineer.com) (blog)



**Nidec**  
All for dreams

Moteurs Leroy-Somer SAS. Headquarters: Bd Marcellin Leroy, CS 10015, 16915 Angoulême Cedex 9, France.  
Share Capital: 65 800 512 €, RCS Angoulême 338 567 258.