



news

THE EUROPEAN MAGAZINE OF LEROY-SOMER

23

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Europe supports new growth sectors



The economic recovery plan

In a bid to revitalise the economy and help Europe out of the current recession, the European Commission presented a recovery plan at the end of 2008, built around two pillars: firstly,

the injection of 200 billion euros into initiatives to boost purchasing power and encourage consumption, and secondly, targeted support for short term "smart investments" to reinforce Europe's competitiveness over the long term.

Energy efficiency and the development of clean vehicles are among the new growth sectors being targeted, alongside education and infrastructure projects. By investing in these areas, Europe hopes to preserve jobs, save energy, protect the environment and help European companies to take the lead in highly competitive sectors. The only drawback to the plan is that it overlaps with most of the measures already announced or being implemented by the Member States, who are contributing 170 billion euros to the initiative. The remaining 30 billion euros will be made available by the European Commission and the European Investment Bank (EIB).

The European Energy Programme for Recovery (EEPR)

The Energy component of the recovery plan, dubbed European Energy Programme for Recovery (EEPR), was approved by the European Parliament and Council on 6 May 2009. Almost 4 billion euros are earmarked for energy efficiency and renewable energy development projects in three areas: gas and electricity infrastructures, carbon capture and storage and offshore wind installations.

The European Commission launched a call for proposals on 18 May and hopes to sign the first contracts before the end of the year.

Leroy-Somer offers innovative solutions

Committed to the fight against global warming, Europe has established a set of ambitious targets to be met by 2020, including a 20% reduction in energy consumption and greenhouse gas emissions (compared to 1990) and an increase to 20% in the share of renewable energies in total energy consumption.

Leroy-Somer continually develops innovative solutions for its customers in line with the main targets set by the EU. The company is particularly active in the field of energy efficiency. With electric motors accounting for almost 70% of power consumption in industry and 30% in the service sector, motorised applications are a major source of potential energy savings.

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In the field of renewable energy, Leroy-Somer offers solutions primarily for wind, solar and hydro power.

With regard to infrastructure and service development, another area targeted by the EU, Leroy-Somer has a complete expertise in different infrastructures, from ports, motorways, railways and airports to hospitals through to major projects, such as the Dubai Tower or Stade de France.

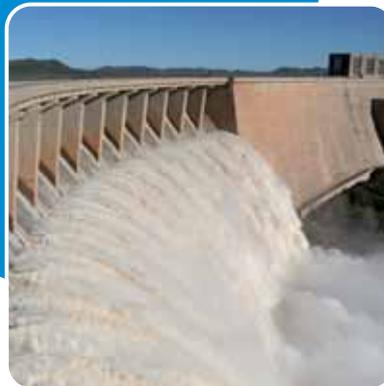
Finally, Leroy-Somer is active in European projects aimed at reducing CO2 emissions and developing cleaner modes of transport. One of Leroy-Somer's key strengths in this area is its extensive experience in electric vehicles and onboard drive systems.

The construction of drive systems for sustainable development is a complex process. Whether the project involves wind, solar or hydro power, all the natural elements – cold, heat and adverse weather conditions – need to be harnessed.

In addition to withstanding extreme weather conditions, products developed by Leroy-Somer are required to meet rigorous operating constraints, such as resistance to vibration and mechanical shock, while offering excellent productivity (e.g. round-the-clock operation) and a long service life.

In the sphere of wind power, for example, the water cooled 3 MW generator is 80 metres high. Designed to meet exact customer specifications, it can operate for 20 years without the need for any major maintenance.

In the rail sector, Leroy-Somer has over 30 years of experience and more than 250,000 auxiliary motors in operation throughout the world. Subject to vibration, shock and extreme temperature variations (from -30 to +90°C), these on-board systems are supplied by static converters, generating a low quality supply. Leroy-Somer level 4 motors with coated technology, particularly



suited to auxiliary traction functions, have a very high MTBF (Mean Time Between Failures) in the region of 1.5 million hours!

Because Leroy-Somer has extensive knowledge of user applications and requirements, it can develop innovative solutions every day, in line with the different national recovery plans in place. More than 85% of drive systems or generators manufactured by Leroy-Somer for all these sectors go through the company's design offices to be tailored to specific customer requirements.

In this respect, Leroy-Somer's network of service engineers is pivotal in providing the design offices with user feedback, allowing the company's products to keep up with sector-specific evolutions.

Solutions to maximise potential energy savings for users must also be underpinned by excellent efficiency as well as the harnessing of new mechanical transmission and electrical design technologies for rotating machines. Permanent magnet technology represents a key source of savings in this area.

Leroy-Somer's numerous successes in recent times, from electric cars to cold room refrigeration, are a clear indication that we are heading in the right direction.



Kenersys turbines

Two turbines types with advanced electrical system



Kenersys is a German/Indian manufacturer of turbines that are highly suited to meet the world market's demand. The company, with its corporate headquarters based in Münster/Germany, is part of the Kalyani Group.

The Kalyani Group is an industrial group from India with a history of more than 50 years and a current turnover of more than \$2.4B. Kalyani Group has an experience of designing, setting up and running wind farms and also manufacturing number of components that go into wind turbines.

Kenersys brings to the market the products and technology backed by an organization that has strong capabilities and expertise in designing such products and also undertakes project management

with robust managerial & financial resources and relevant experience across the complete wind energy value chain.

Kenersys, now a team of 100+ professionals in Germany and India, has received design as well as ISO certifications, set up two prototypes of 2MW and 2.5MW ratings in Sweden and will be installing its commercial series of these turbines both in India and Germany starting from 2nd half of 2009. The company has its Center of Innovation in Münster, Germany and manufacturing and sales facilities both in Europe and India.

Kenersys turbines have made innovations in nacelle design, cooling systems and load optimization, using components from highly reliable partners with

a good track record. Several of the competitive advantages offered by Kenersys wind turbine generators are:

- Advanced Power Conversion with a full conversion system and improved electrical architecture making the turbine suitable also for weaker grids as well as for tougher grid codes.

- Advanced Auxiliary Supply Unit: the Kenersys Auxiliary Supply Unit (ASU) protects the turbines against grid-based over and under-voltages and provides constant voltage and frequency to all turbine electrical components – designed for a quick restart after a production stop.

- Advanced Climate Adaptation: The water cooling system for converter and generator allows the turbine to withstand a wide range of operating temperatures.

- Advanced Automatic Lubrication: the turbines are equipped with an automatic lubrication system for minimising maintenance costs.

- Advanced Material: the main mechanical structure like the main frame is cast in highly ductile spherical graphite cast iron providing optimised load induction.

Close collaboration between Kenersys and Leroy-Somer

The collaboration between Kenersys and Leroy-Somer began at the pre-design stage of the turbine. Leroy-Somer was thus able to propose and implement innovative solutions on both the generator and the turbine itself. This close partnership between design offices has helped to optimise the entire system.

Once again, Leroy-Somer has confirmed its position as an essential partner in the field of renewable energy.

Leroy-Somer World class leaders in generator technology

Leroy-Somer, with more than 20 years experience in the Wind turbine business, developed for Kenersys specially adapted 2 and 2,5MW Synchronous alternators with a very efficient water jacket cooling.

Leroy-Somer Wind turbine generators are designed and developed in France. They are then mass produced in dedicated production lines in factories appropriately located. Readily available Leroy-Somer facilities exist in USA/Europe/India/China.



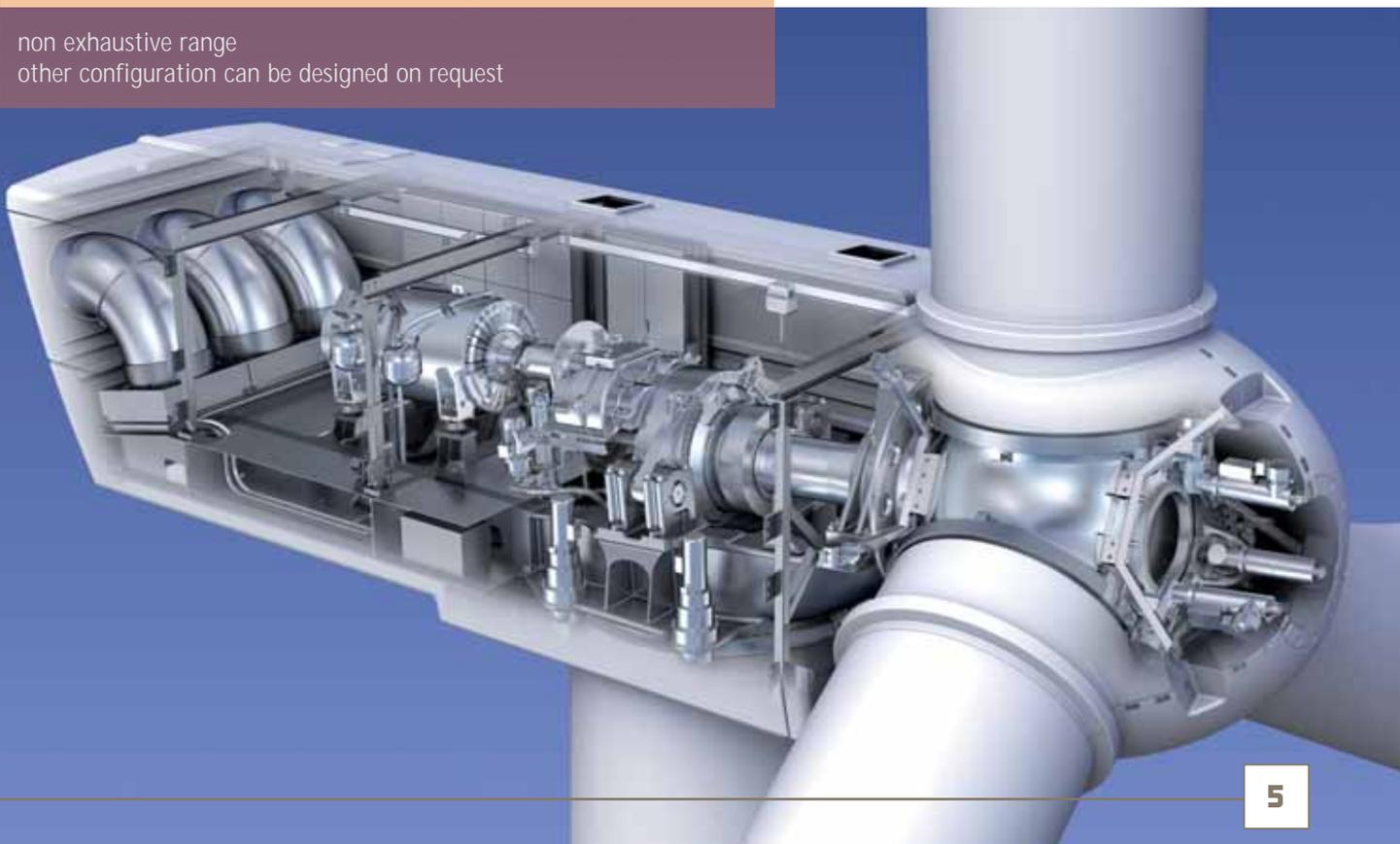
With a long experience in design and manufacture of tower crane orientation systems, Leroy-Somer today brings innovative solutions in the market for special application drive systems for wind turbine auxiliary equipment.

Innovation, mastering of technologies, product reliability and close service are qualities, which make Leroy-Somer a World class leader in generator technology.

Description of the Leroy-Somer Wind turbine generators

Power ranges	600 kW - 5MW
Voltage ranges	400 V - 15 kV
Shaft height	450 - 630 mm & more
Poles	4 - 6 - 8
Type of generators	induction or synchronous
Speed range	fixed or variable speed
Construction	IM1001 - IM1101 - IM1002 ...
Cooling mode	air/air - air/water

non exhaustive range
other configuration can be designed on request



Application: solar tracker for ground-based photovoltaic installations

Drawing on 50 years of experience in guidance applications, Leroy-Somer presents a new range of global and customised drive solutions for solar tracker manufacturers.

Photovoltaic electricity production in Europe is going from strength to strength, with almost 35% annual growth over the past decade. This growth has been buoyed by mature developments in technology in this area as well as favourable pricing policies initiated by many EU States to stimulate investment. According to the EurObserv'ER barometer, the European Union is the world's leading solar market with 9533 MWp of installed capacity at the end of 2008.



With a capacity of 3405 MWp, Spain is a highly dynamic market, proving fertile ground for Leroy-Somer's solar tracker drive solutions, particularly in the field of ground-based photovoltaic installations, more commonly known as solar farms.

To provide a clearer idea of the scales involved, a 4 MWp solar farm measures 80,000 m² and produces +/- 4.500 GWh, equivalent to the power consumption of 5,000 people.

Tracking systems that follow the course of the sun throughout the day can boost yields from solar panels by up to 40%, particularly during sunrise and sunset. Trackers can either be mono-axial, improving solar energy collection by tracking the sun on its azimuth, or bi-axial and seasonal, where the tracker positions the solar panel perpendicular to the sun at all times (zenith).

Given that electricity purchase agreements generally last twenty years or more, the choice of configuration for solar trackers is usually based on the results of profitability analyses. The more costly the solar collection technology, the more powerful it becomes, making the tracker a more attractive proposition. Although they are regarded as an additional investment at the outset, trackers can reduce the collection surface required and provide a faster return on investment.

Manufacturers of mobile photovoltaic units each have their own set of unique configurations. This is met by a diverse range of technologies for the motor, with choice dictated – among other things – by the size of the panels installed. For a 1.2 kWp panel measuring 16 m², a small servomotor will suffice. On the other hand, a 40 kWp panel measuring 280 m² would require high capacity geared motors with greater reduction ratios.

At Leroy-Somer, we do not offer a single, dedicated range. We always strive to identify the most suitable solution to meet the customer's diverse requirements, underpinned of course by a common denominator: the need for speed reduction. Multiple factors determine the choice of gearbox (Planibloc, Compabloc, Multibloc, etc.), including how the tracker has been designed, the speed, output axis, dimensions, reduction ratio and attachment points. On request, Leroy-Somer can go one step further and design a special motor or servomotor combined with a low backlash gearbox, the ideal solution for trackers for solar panels with concentrator plates, which use reflective surfaces to focus sunlight on a smaller surface.

Finally, tracker drive systems must be capable of withstanding extreme weather conditions, such as temperature variations and high relative humidity levels. Leroy-Somer geared motors have a service life of over 20 years and are designed to operate in harsh environments. Moreover, Leroy-Somer offers a complete range of services for all geared motors to ensure lasting performance throughout the lifetime of the plant.

Leroy-Somer's active involvement in photovoltaics once again demonstrates its expertise and commitment to renewable energy and sustainable development.



Transdrive

Transdrive was established in 1982 and has rapidly expanded over recent years to become the UK's leading independent specialist distributor of variable speed drives, electric motors, gearboxes, clutches and brakes.

For many years, the strong experience of Transdrive in DC technology and the quality of service provided have made this company the ideal partner for Leroy Somer.

Today, Transdrive is one of the main UK distributors for Leroy Somer, not only for DC but also for AC technology. It is supported by a comprehensive stock of motors and drives plus gearmotors via the Leroy Somer Gear Assembly Centre based in Skelmersdale.

Transdrive are able to carry out commissioning and trouble shooting on DC and AC drives by a factory trained service engineer.

The strength of Transdrive combines a high level of technical knowledge and the capacity to provide packaged solution: gears, motors, drives and commissioning !



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DISTRIBUTION



Stock of AC drives up to 15kW.



All type of gearmotors can be supplied in short time: worm and wheel, helical bevel, parallel shaft, helical.



Stock of 2P and 4P AC motors, up to 55Kw. Available with many options including forced ventilation, encoders, brakes.



Stock of DC motors up to 220kW



Stock of DC drives supported by Leroy-Somer "guaranteed availability"

Unloading Jacking Motors on Older Oil Platforms

Worn-out jacking motors on older oil platforms could be replaced with new interchangeable motors. Replacement is faster, cheaper and much safer than repairing the old jacking motors. Maersk Contractors, Noble Drilling and Transocean have already initiated the replacement.



Leroy-Somer Denmark, in close cooperation with the electromechanical service centre Olesen & Jensen in Esbjerg, have developed a jacking motor, which makes replacement of worn out jacking motors cost effective compared to repair.

Many oil platforms were built before 1985 and are still in operation around the world. When the platforms were built, electromechanical jacking systems with integrated brake motors were used to elevate and lower the platforms. An oil platform is usually equipped with 72 jacking motors, 24 on each of the three elevating/lowering legs.

The severe environments, in which the oil platforms operate, mean that a lot of maintenance is needed over their working life and that includes the brake motors. Insurance companies only permit a maximum of 2 of the 72 motors to be out of service during the jacking operation.

Time is Money. A lot of Money!

In the oil industry it has always been necessary to repair or replace worn-out jacking motors, but there is one problem here – the original jacking motors are no longer produced. Furthermore, it is difficult to obtain spare parts and they are very expensive. All this has often resulted in unstable jacking; and for the oil industry, this is equal to wasting money. An awful lot of money!

As a result, Olesen & Jensen were contacted by Maersk Drilling which was looking for a sustainable, future-proof solution to the problems with old jacking systems.

Developing Interchangeable Electrical Motors

Olesen & Jensen was contacted because the company had the facilities, the expertise and the technical equipment to perform any form of electromechanical service and in particular because Olesen & Jensen have many years of experience in servicing the off-shore industry.

Olesen & Jensen is an authorised Leroy-Somer service centre. It is also ATEX-certified to perform works on electric equipment where there is a danger of explosion, such as in the oil and petrol gas industry.

In cooperation with Leroy-Somer Denmark, Olesen & Jensen developed a 100% interchangeable motor, which matches original jacking motors in terms of their mechanical and electrical design. The replacement motor is designed to conform accurately to the original jacking construction of oil platforms, allowing for a fast and effective replacement.

Field-tested and Effective

As of today, Northern Offshore (Maersk Contractors), Noble Drilling and Transocean have replaced jacking motors with new Leroy-Somer jacking motors on 5 oil platforms.



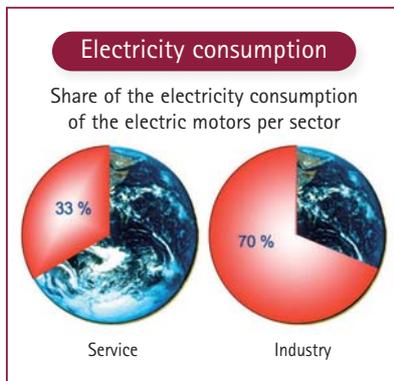
Scheduled replacements and experience show that all jacking systems work well with the new motors. It is recommended to replace all jacking motors on an elevating/lowering leg (i.e. 24 motors) at the same time because all motors run at the same speed and possible overloading of a motor will be avoided. Leroy-Somer Denmark has identified 444 older oil platforms worldwide that might need to replace their jacking motors.



DYNEO[®], even more energy savings !

Situation

The reduction of CO2 emissions is one of the major challenges for the preservation of our environment. A huge opportunity for energy saving is from electric motor usage as they represents 70% of the electricity consumed in industry.



Comparison

For the HVAC application, variable speed solutions will directly affect the energy consumption. By using high efficiency motors, the savings will be much higher.

Below is a comparison of the energy consumption between a high efficiency EFF1 motor and a very high efficiency Dyneo LSRPM motor, both associated with an inverter:

Motor	EFF1	Dyneo [®] LSRPM
Total efficiency (motor + inverter)		
100 % load	94.8 %	96.4 %
50 % load	93.2 %	95.8 %
25 % load	90.5 %	95 %
Energy cost for a year (based on 0.085£ per kWh)	£ 27,764	£ 26,537

Motor: 75kW – 3000rpm + Powerdrive inverter.

Duty cycle over a year: 1000 hours at full load, 4000 hours at half load and 3400 hours at ¼ load.

Solution

DYNEO[®], at the leading edge of the variable speed technology available in today's market, includes all synchronous permanent magnet motors and inverters solutions of Leroy-Somer.

Dyneo[®] LSRPM synchronous motors benefit from the proven asynchronous motor mechanics:

- IP55 frame according to IEC 60034,
- Power from 0.75kW up to 400kW,
- Torque from 1 to 1400N.m,
- Speed from 1 to 5500 rpm,
- Frame size from 90 up to 315.

Advantages

- Compactness: reduction of the frame size up to 3 sizes below the standard asynchronous motor :
 - Reduction of the weight and dimension of the driven machine
- Exceptional efficiency level over the whole speed range:
 - Reduction of the energy bill
 - Increased life time and simplified maintenance
- Variable speed application with:
 - Constant torque over the speed range
 - Optimised power for centrifugal application



Pay back time of Dyneo[®] solution is approximately a year.

The efficiency of asynchronous motors and permanent magnet motors

Motor energy efficiency has become a subject of critical importance. This article aims to explain in simple terms the differences in efficiency between conventional asynchronous motors and permanent magnet motors.

New efficiency classes



The IEC has published the new 60034-30 standard which defines efficiency classes for 2-, 4- and 6-pole asynchronous motors, with power ratings from 0.75 to 375 kW (1 to 500 HP). Broadly speaking, these efficiency classes (IE1 to IE3 by increasing level of efficiency) correspond to the former eff2, eff1 and premium categories, with the recent addition of IE4, or super premium. Currently provided for information purposes only, IE4 may include solutions built for example around magnet motors driven by a variable speed drive. Its

introduction was recognition that asynchronous motors in the standard power ratings and frame sizes would not be able to deliver these efficiencies while meeting the conditions for economic viability.

Asynchronous motors

Asynchronous motors are induction motors. This term conceals the fact that the magnetic flux is created by the stator currents and, by extension, the power supply. The motor therefore draws current even with no load, without supplying power. This is known as the magnetising current, or more commonly the no-load current – a purely reactive current that is necessary regardless of the load. It thus pushes down the power factor to values significantly below 1, decreasing still further as the number of poles increase. To put this into perspective, it is easy to obtain a power factor greater than 0.9 for a 2-pole motor; however, it is relatively difficult to exceed 0.7 using an 8-pole motor.

Permanent magnet motors

However, in the case of permanent magnet motors, the magnetic flux is produced by the magnets without generating any losses. Consequently, at the same torque, the current drawn by magnet motors is significantly lower than for asynchronous motors. As Joule losses of the stator are proportional

to the square of the motor current, generally representing the largest source of loss, the difference in efficiency is considerable.

Another well known disadvantage of asynchronous motors is that an amount of slip is required for operation. This slip results in unavoidable losses in the rotor cage, which increase as the slip increases with the torque. Such losses do not occur in magnet motors.

Exceptional efficiencies

Magnet motors inherently deliver exceptional energy performance. This performance is further increased when the motor is paired up with an electronic drive. Indeed, the vector control strategies that may be used are significantly more effective than their standard counterparts. In particular, the flux level (and therefore iron losses), power factor and even optimum efficiency can be obtained by controlling all load points, once no longer at the voltage and/or current limit, an extremely important - if rarely mentioned - point. For implementation to be truly effective, the drive must "recognise" the motor. Which makes the global solution more attractive than ever before.

Already fully compatible with class IE4 and beyond, the Dyneo motor range is Leroy-Somer's answer to the new energy constraints.



ATEX "Gas"

New products from Leroy-Somer

In the oil and petrochemical industry, Leroy-Somer's range of ATEX "Gas" safety motors has met with great success among operators, engineering firms as well as manufacturers throughout the world, helping to establish the company as a leader in this field. Since last year, Leroy-Somer has been implementing a far-reaching strategy to address all applications for the chemical and pharmaceutical sector in a bid to consolidate its position on these key markets.



Developments in industry standards

From 1 July 2003, all electrical equipment for explosive atmospheres on the market in Europe must conform to the requirements of the European Directive 94/9/EC. Three zones have been defined to reflect the three levels of risk. In zone 0 areas where the risk is present continuously, the use of electric motors is prohibited. In zone 1, where risk is likely to occur, only EEx d/d(e) flameproof motors (FLSD range) or EEx e increased safety motors (LSE/FLSE range) are authorised. In zone 2, where the risk is minimal, EEx n non-sparking motors

can be used (LSN/FLSN range).

Since November 2008, the EN 50014 and following standards have gradually been replaced by the harmonised IEC/EN 60079 standards. Fortunately, these standards have had very little impact on the construction of safety electric motors.

To facilitate international trade in safety electrical equipment, the IEC (International Electrotechnical Commission) developed a new non-mandatory system in Europe known as the IEC Ex standards. These new standards are very popular outside Europe, particularly within the oil

sector, where they pave the way for solutions conforming to international standards. They also provide direct access to markets further afield, such as Australia or New Zealand, and facilitate the certification of products for large markets, such as Russia and China.

By the end of 2009, all Leroy-Somer ATEX motors will be in harmony with these new standards.

The ATEX "Gas" markets

Safety motors dedicated to ATEX "Gas" applications are designed for use in two major sectors:

- The oil market (exploration, produc-



tion, refinery and petrochemistry), where engineering companies play a crucial role in the study and implementation of large-scale projects and are commonly required by the operators to work with approved subcontractors. Since the early 90s, Leroy-Somer's dedicated team of specialists has been providing customers with powerful ATEX motor solutions that are now global benchmarks across the industry.

- The chemical and pharmaceutical sector for which Leroy-Somer is developing new ATEX ranges and where considerable ground has already been covered in meeting the requirements of key applications (agitation, pumping, transport systems, etc.). On the German market, for example, most of Leroy-Somer's safety motors offer a VIK specification for operation in harsh and corrosive environments.

The chemical and pharmaceutical industry is also acutely sensitive to the efficiency levels of machines. Although ATEX motors are not directly covered by the new European EuP Directive (see data sheet in LS News no. 22) which will come into effect in June 2011, they are nevertheless included in the new IEC 60034-30 standard which defines and specifies three efficiency classes for motors (IE1, IE2, IE3).

In addition, the electrical "core" of the future series of Leroy-Somer FLSN and FLSD motors will be identical to that of the FLS standard ranges. Most of the motors in Leroy-Somer's ATEX safety range will therefore see the same improvements in efficiency as the standard ranges covered by the European Directive on energy efficiency.

A global approach

And of course, Leroy-Somer is constantly working to improve its ATEX product range. The FLSD range, which covers 55% of ATEX gas motor requirements, is currently in the final phase of the latest series of updates. Similarly, in order to meet specific needs for flameproof motors in the chemical sector, the range of FLSD motors version IIC will be extended over a higher power range.

That's not all. Leroy-Somer also offers a whole range of customised services for manufacturers and users. So whether you wish to adapt a drive extension or install special windings, Leroy-Somer's technicians can offer you the perfect mechanical or electrical solution to meet your needs.

The company has developed one of the most comprehensive ATEX offers on the market, with a large variety of motor – drive – gearbox combinations available. Each component in the system is designed to operate together seamlessly. What's more, Leroy-Somer continuously strives to improve and expand its ATEX offer by incorporating it into a number of core services (Guaranteed Availability, Rapid Assembly Centres and Short Leadtime Production), all of which are recognised by customers throughout Europe.

Finally, Leroy-Somer is a proven expert in the field of variable speed, offering innovative variable speed drive solutions at the forefront of technology. An increasing number of ATEX motors now use variable speed technology, even in the traditionally reticent Oil & Gas sector, where there is now great demand for more energy efficient solutions. We have therefore introduced a fast delivery policy for variable speed flameproof motors up to 22 kW.

To meet the individual requirements of leading manufacturers in their specific markets, Leroy-Somer can also offer ATEX solutions that draw on magnet rotor technology – integral to the Dyneo range - to deliver outstanding efficiency.

Providing a healthy outlook for projects for many months and years to come.

In the space of just a few weeks, Meidinger developed an ATEX fan driven by an FLSD 112M 4 kW B5 EEx d IIB T4 2-pole motor to boost biogas pressure. The project was conducted in partnership with Leroy-Somer, who developed a motor featuring a special shaft extension for mounting a heat trap in record time.



MEIDINGER
WITT

Gearboxes: Leroy-Somer takes its 3000 range to a new level

Leroy-Somer has expanded the top end of its 3000 range of helical gearboxes with new sizes 36 and 37. Combined with different Leroy-Somer motor solutions, they serve as a new technological platform for high-power geared motor applications.



Completely updated gearbox range

Early in 2000, Leroy-Somer launched an initiative to update its core Compabloc, Manubloc and Orthobloc helical gearboxes, complete with new design and specifications. Named the 3000 range, the updated products have replaced those of the ageing 2000 line.

The first stage of this far-reaching project saw the appearance of Compabloc gearboxes, sizes 30 to 35, followed in 2006 by the new Orthobloc and Manubloc solutions in sizes 32 to 35. Offering better performance - with 30% more torque than their predecessors in the equivalent sizes - and greater robustness and adaptability, the new 3000 range quickly made its mark to secure a leading position in a fiercely competitive market.

Today, building on this success, Leroy-Somer is expanding the basic offer and completely updating its size 6 and 7

ranges for both Orthobloc and Manubloc.

High power, energy saving solutions

In every application, from cranes designed to lift increasingly heavy loads to quarry conveyors travelling longer distances, the demand for more power is growing.

And when the power and size of geared motors increase, the energy efficiency of the application becomes more critical. It was with this trend in mind that Leroy-Somer created the new gearbox ranges.

Firstly, in terms of technology, gearboxes with helical teeth deliver an excellent level of mechanical efficiency, in the region of 97%, unlike other technologies where efficiency is only around 50 to 70%.

Secondly, Orthobloc and Manubloc

gearboxes feature a hollow shaft which fits directly onto the customer's drive shaft. This output characteristic reduces the number of associated - and usually energy intensive - devices.

Finally, with revised and updated electronics, the new 36 and 37 gearbox ranges work with Dyneo technologies to deliver phenomenal energy savings and quick return on investment. By boosting power, the use of electronics during the low speed or variable load operation phases provides real added value in terms of energy efficiency.

Currently, Leroy-Somer is one of the only manufacturers offering this type of solution for high power systems.

Innovations for users

Large gearboxes have a number of specific requirements. Ever attentive to the needs of users, Leroy-Somer has introduced a variety of innovations to match.

Firstly, the geared motor now features a backstop to cover different motor-gearbox coupling requirements. With its robust design and no need for extra space or maintenance, the backstop is an attractive alternative to the electro-mechanical brake for applications, such as conveyors, where the safety requirement demanded is less stringent.

With new developments in technology, the new 36 and 37 ranges offer greater speed reduction ratios than before, at both the top and bottom end.

They also incorporate oil control systems based on a level indicator. Located on the upper part of the gear-

box, these systems make it even easier to monitor and maintain your equipment.

Rationalisation of components and improved services

Renowned for its extensive range of motors (general purpose, ATEX, variable speed, servo and permanent magnet technology, food processing, etc.), Leroy-Somer probably has the most comprehensive offer on the market. What's more, Leroy-Somer manufactures motors, gearboxes and variable speed drives with seamless compatibility in mind, making it possible to build complete drive systems.

With respect to its geared motors, Leroy-Somer has streamlined the entire range so that the different types of motor can be mounted interchangeably on all three series of gearboxes in the 3000 range.

Leroy-Somer has improved its service offering and leadtimes, both in terms of

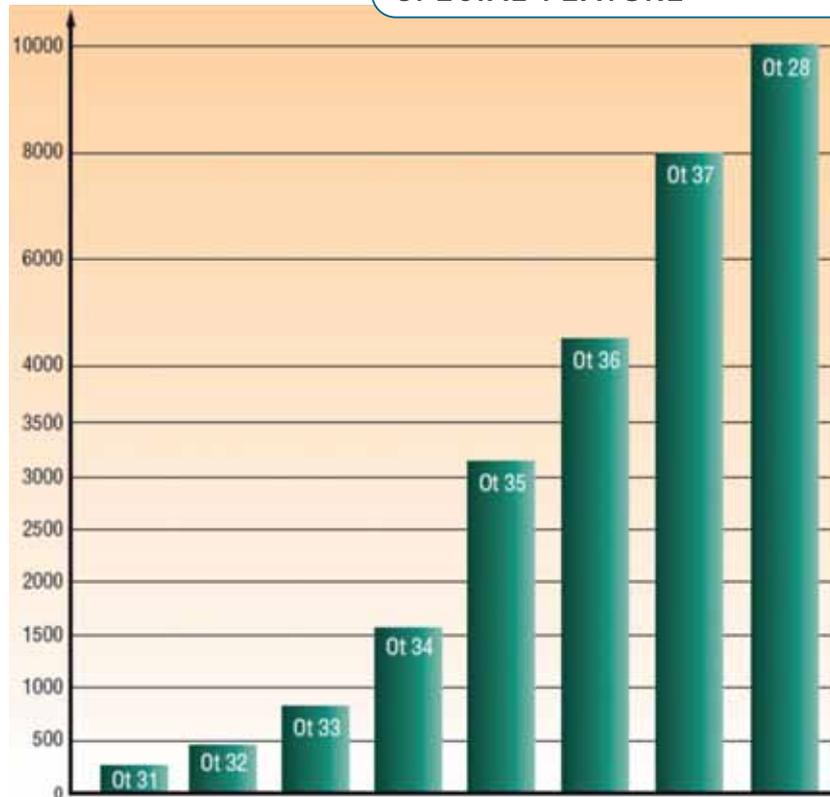
The Orthobloc 3000 geared motor is a modular product for even the most demanding applications. It can be combined with LS standard motors or any of the new generation LSRPM motors in the Dyneo range.



Ot 3633 + LS 15kW motor, 4500 Nm output torque with shrink disc on right



Ot 3633 + LSRPM 36kW motor, 4500 Nm output torque with shrink disc on right



motor-gearbox combinations and choice of options. Working closely with gearbox assembly centres, the company has broadened its integral mounting offer for power ratings of up to 45 kW, available in 10 working days ex. works.

Similarly, for the 36 and 37 ranges, multiple fast leadtime options have been added to the basic package, covering hollow shafts, solid shafts, shafts with shrink disc, flange or face mounting or even torque arms for shaft mounting.

Built on outstanding efficiency, as well as product and service innovation, the 3000 range continues to lead the way in the gearbox market.

The Orthobloc range of geared motors with bevel helical gears and right angle output comes in 8 sizes up to 10,000 N.m.



Permanent Magnet Solutions
Dyneo[®]



A masterpiece
of concentrated power



DYNEO[®], an innovative solution to propel your energy savings!

From 0.25 to 550kW, DYNEO[®] combines permanent magnet motor technology with electronic variable speed. DYNEO[®] attains unequalled efficiency levels over the whole speed range generating an extremely rapid return on investment.

Due to its compactness, DYNEO[®] integrates easily into all systems having exceptional performance and the smallest size on the market.

**LEROY[®]
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