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THE EUROPEAN MAGAZINE OF LEROY-SOMER N°13

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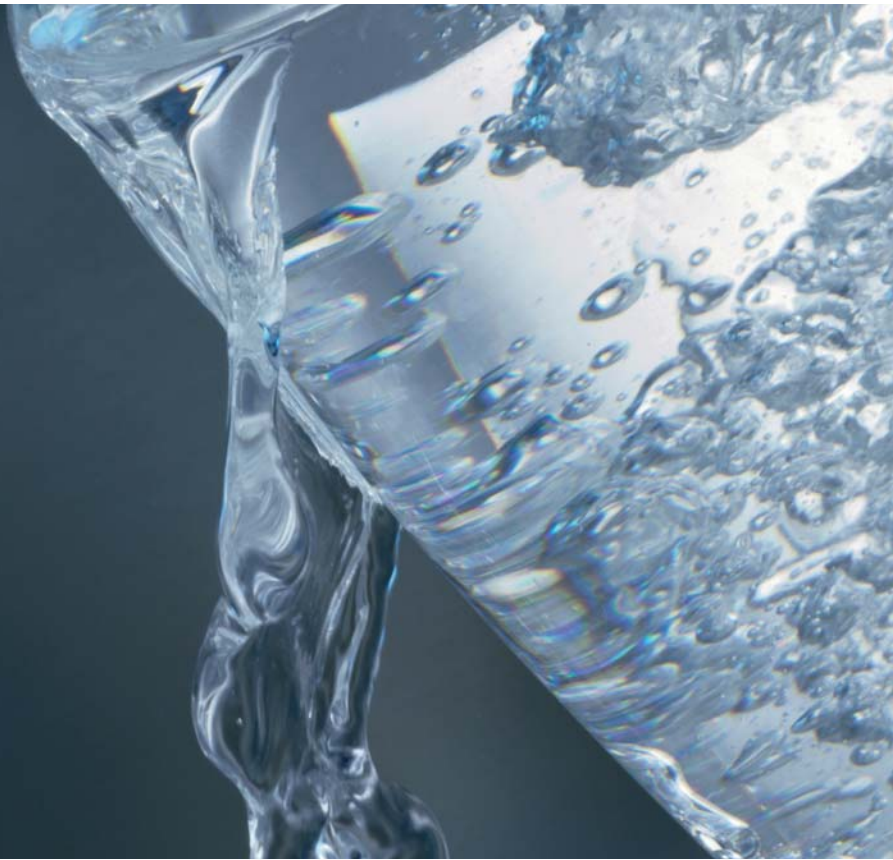
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Water does not flow from a spring!



Water, which seems so natural, is actually the subject of intense human, collective and economic activity. The production and distribution of drinking water and the treatment of wastewater require sites that are often enormous! For example, the largest sewage treatment plants can treat up to 2 million m³ of water per day!



A complex market



Water is a complex and very active market in Europe as in the rest of the world. In Europe, significant investments have been made, mainly in wastewater treatment, both to make existing sewage treatment plants comply with European standards and to build new plants. The drinking water market is itself a changing market, except in emergent countries like China and Brazil where there is strong growth.

The water market is primarily a public market. It is generally a city or town (contracting authority) that takes the initiative of refurbishing or building a sewage treatment plant or pumping station where the capacity and power will be in direct proportion to the density of the local population.

The contracting authority then joins forces with a design office (project manager) for wastewater. Its task will be to define precisely the community's short and medium-term needs. Together, they ensure

different engineering companies or groups of companies compete with each other. In Europe, these invitations to tender are strictly controlled to avoid any abuse by a market leader.

The successful engineering company will then put forward a process that best meets the criteria imposed in terms of volume (population), quality (observance of standards) and operation (results). This engineering company will generally join forces with a civil engineering company responsible for building the infrastructure.





Building up reserves costs money

On the drinking water market, whatever the time and overall consumption, when end users turn on their taps, they usually have a rate of flow and constant pressure. It is the supplier's responsibility to ensure this water is available at any time!

To ensure this continuity, the distributor has several methods available to him, the simplest of which is to control the differences in rates of flow, at constant pressure, with the aid of reservoirs. In the present economic context, controlling stock is a costly operation. The trend increasingly is towards optimisation of flow rates. On the drinking water market, this is expressed by the concern to continually adjust flow rates to the volumes being treated.

The station operator must be able to control wastewater as well, according to the quantities that arrive, at the risk either of discharging this water into pools or directly into rivers.

The effect of this change, whether upstream (drinking water) or downstream (wastewater), is that the regulation of flow rates requires the use of new technologies, the speed of which varies. In fact, from

the time when flow rates are regulated, each machine placed in the process also becomes a variable speed machine.

The LS Approach

For this market segment, Leroy-Somer have been developing different comple-



mentary approaches for many years. Leroy-Somer provide operators with a vast network of local services. These service centres are organised to respond to demand increasingly oriented towards short delivery times and on-site service provisions.

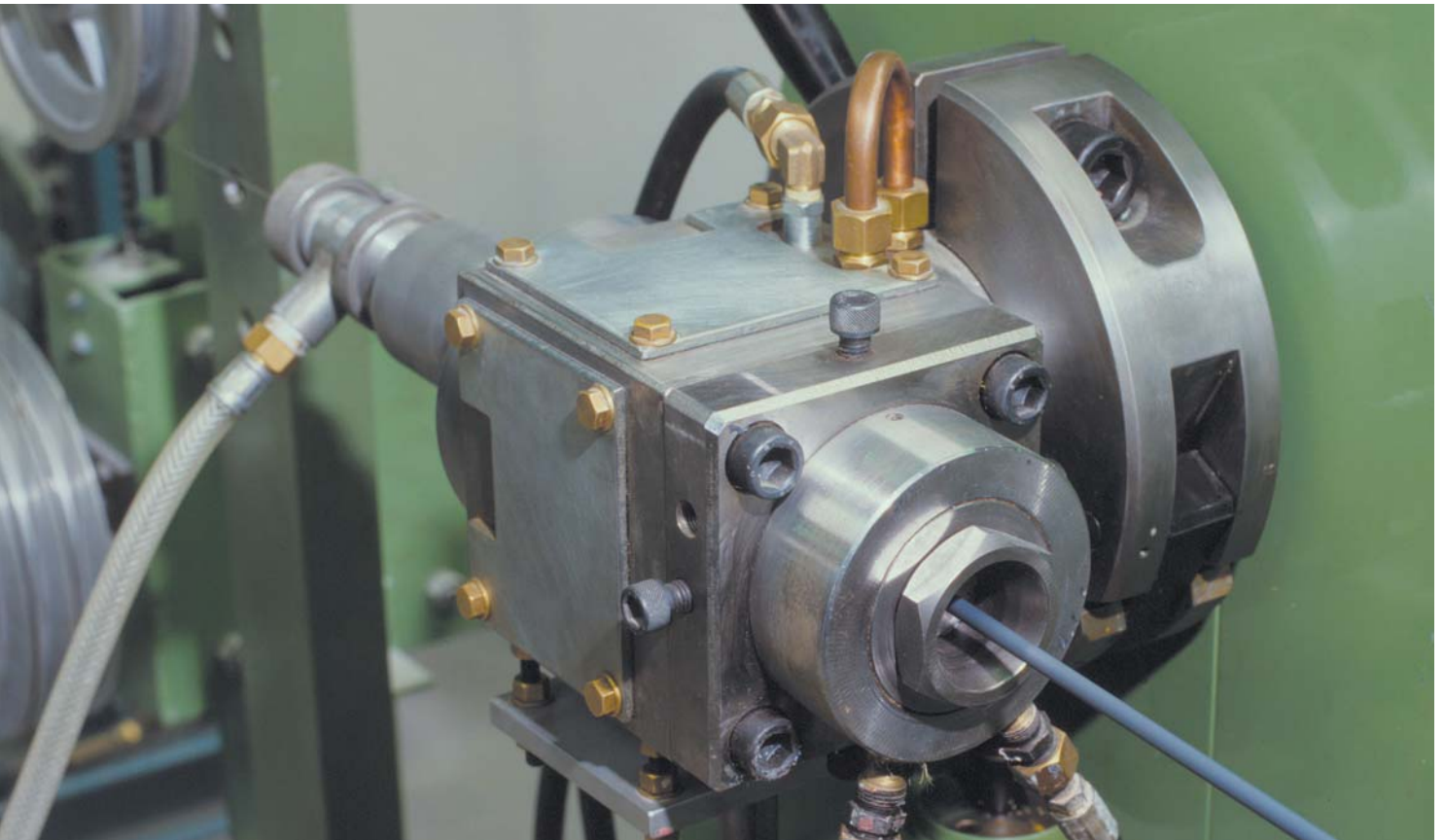
At the level of the engineering companies and OEMs, only the major international groups covering the world are able to position themselves correctly. Indeed, to be taken on by an OEM, the sub-contractor first has to be stipulated by the engineering company and sometimes by the operator, for whom it is not in their best interests to see the number of different brands multiplying over the same site.

Leroy-Somer are probably the only supplier able to provide a complete drive solution consisting of motors, speed reducers and variable speed drives fully adapted to the different water markets. Furthermore, the introduction of variable speed also means that new solutions can be put forward with the aim of reducing the overall cost of installation (purchase price + running cost).

With Leroy-Somer, water will definitely continue to flow at the correct pressure whatever the overall consumption rate!



Omerin, cables for extreme conditions



Whether it involves using our coffee machine, surfing the web or getting an aircraft off the ground, the world around us is wired up from all sides. Without electric cables, the majority of our domestic or industrial activities would not function!

Diversity and ability to react

Although very similar in appearance, each cable has to be able to withstand constraints of use as heavy as they are different: physical and chemical (mechanical shocks, aggressive or explosive atmospheres) and electrical (current density, high pulse or permanent voltage).

Omerin's impressive ability to react responds to this diversity in applications. At each specific request from a customer, the company launches a study and the laboratory carries out the necessary tests. Omerin select the most suitable material (copper, nickel or other resistant or refractory materials) based on the customer's technical specifications, and from a wide range of materials choose the material which will be used to insulate and sheathe the cable.

The company are thus developing hundreds of new products per year to meet customers' often exceptional demands.

Creative technological change

The Omerin adventure in the industrial braid sector started in 1959 as a result of a formidable



technological challenge: transforming the know-how acquired since the beginning of the century in the textiles sector, chiefly in braiding techniques in order to attack a new market, that of the braided insulating sheath and high-temperature electric cable.

Omerin today produce 40,000 km of cables a year, have over 30,000 references and 7 production sites on which over 500 people are employed. Omerin are the world leaders in silicon insulated wire and cable. They are recognised specifically as the world experts in wires and cables for extreme conditions, from - 190°C to + 1400°C.

A relationship of trust

Omerin regard Leroy-Somer as one of its top customers and have done so for around 45 years. Originally suppliers of braided fibreglass insulating sheaths coated for heat categories F and H (Siligaine), Omerin have over the years developed a whole range of electric cables for category B, F, H and C winding outputs (Silicable, Siliflon, Varpren,...etc.).

Manufacturing a cable or sheath is the result of combining several sensitive technologies, the main ones of which are braiding, stranding, extrusion, impregnation, coating, labelling and packaging, as well as self-regulation and constant traceability (ISO 9001 demands it!).

To ensure the quality and reliability of their products, Omerin decided, when the company was established, to develop their own production lines and gave Leroy-Somer the task of optimising the drives for these different processes. Leroy-Somer are therefore involved in developing or modernising the different production lines from the design stage.

With a very comprehensive range available, Leroy-Somer provide a consistent brand over different Omerin sites, guaranteed to reduce costs and provide greater efficiency for maintenance teams. Visiting the different production sites is highly informative: all the sites are fully equipped with Leroy-Somer drive systems.

Successful collaboration

The present renewal of the variable speed drives on extrusion lines is a fine example of this collaboration. Coating a special thin



cable with silicone is a delicate operation requiring an extremely stable, continuous unwinding speed.

Originally, extrusion lines were fitted with direct current motors. These have gradually been replaced by closed loop, asynchronous motors with a UMV 4301 variable speed drive. Today, this drive has itself been replaced by the new Unidrive SP range. This is really appealing to Omerin's maintenance service.



They have been given a new generation of control algorithm and guarantee open loop, optimum performances at speeds below 1 Hz.

"This new drive shows remarkable progress", say François Spalinger, Omerin's Production Director, and Thierry Pegheon, Maintenance Director. "Firstly, with the programming cards specific to the different jobs (winding, positioning, etc.) integrated from the outset, we make savings on a lot of our special equipment that it is no longer necessary to install. This drive also gains in being user-friendly and visible, the screen can be pulled out

and exchanged for the entire range of variable speed drives. Furthermore, the documentation has been widely reviewed, which means that commissioning is even easier. Finally, various improvements have meant that we have been able to reduce the overall installation cost. For example, it is no longer necessary to provide a main ignition switch on the production line because a security input is provided specifically for the drive".

Omerin and Leroy-Somer, a winning relationship for 45 years!

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Ventilation in car parks and tunnels

The Danish company YORK Novenco is one of the world's leading suppliers of ventilation and fire fighting systems to the industrial, the offshore and the marine sectors. Thanks to its environmentally friendly and energy-saving quality products the company has experienced great success.

YORK Novenco covers different areas of business. It produces air handling and ventilation systems for installations on land, at sea as well as offshore. The company's area of business also includes fire fighting systems as well as consulting and general services. One of the company's most important areas of business is the production of ventilation systems for car parks – a business niche which over the past years has seen significant growth.

YORK Novenco has over the years supplied ventilation systems for road tunnels, and design and development has often taken place in close cooperation with the local

authorities. This expertise is now also applied to underground and multi-storey car parks. The use of jet fans combined with the use of exhaust fans eliminates the need for expensive ducting and reduces operating costs due to less pressure loss.

The Novenco system was chosen for one of Denmark's largest building projects - Field's, a huge, recently-opened shopping centre in Ørestaden just outside Copenhagen. Field's comprises 3 floors of shops, restaurants and office facilities as well as a two-tier underground car park. The entire establishment covers an area of 115,000 square metres.



Ventilation for 3000 cars

YORK Novenco supplied the ventilation system for the 58,000 square metre underground car park at Field's. This is the equivalent of 8 football fields! The car park can accommodate 3000 cars, and there is an hourly air circulation of 300,000 m³ on each floor. There are 180 jet fans with Leroy-Somer motors. The ventilation shafts are 2 1/2 x 65 metres, and the exhaust fans lead the polluted air out through the roof of the shopping centre.

Field's underground car park is just one of YORK Novenco's many interesting projects of this kind. Other interesting projects include the Benefica and Porto stadiums in Portugal, the new shopping centre Riem Arcaden in Munich and Hyde Park in London.

YORK Novenco has chosen Leroy-Somer as one of its motor suppliers. Standard and high-temperature motors are used in jet and axial flow fans for the circulation of air in car parks and tunnels. These systems are very environmentally friendly and extremely effective in the event of fire.



A report of an atmosphere surrounding these products has been filed as Explosive!

Leroy Somer has celebrated over 80 years of electric motor and power generation production since the founder Marcellin Leroy had a vision to bring power to agricultural processes in the early 1900's.

Today the company consists of 5 divisions, with 36 production units and a subsidiary in every major country of the world employing 8000 people.

The 5 divisions include, Fractional Drives, Industrial Drives, Gears, Electronics and Alternators.

The UK operation has a Head office in Hayes with a further sales and distribution centre in Skelmersdale where a new Gearbox assembly centre has been established.

Adapted motors and drives, which allow cost reductions in a manufacturers product, have been a speciality of Leroy Somer over many years, in addition to the vast range of standard motors and drives you would expect from a world class manufacturer.

Research and development investment is the envy of many industrial manufacturers and has resulted in new technologies that have transformed many markets including compressors, pumps, materials handling and transportation.

A leader in development of motors, with integrated electronics and hybrid permanent magnets, Leroy Somer is now in the forefront of motor production designed to conform to new standards particularly ATEX, High Temperature Smoke Extract and electronic drives for these applications.

ATEX is of particular concern; process industries such as chemical and petrochemical have well-established safety assessment procedures and identification and marking of hazardous zones is a part of the business. The new requirements of ATEX will mean that the responsible person at the end user will have to assess existing equipment both electrical and mechanical and maybe for the

first time consider dust, however the expertise exists to make this assessment.

Leroy Somer has a complete range of motors EExd, EExd(e), EExn and EExe for zone 2 and 3 for Gas and Gas and Dust and also Inverter drives certified for these applications.

Dust as an explosion hazard has been included for the first time in the new requirements and for many industries storage and processing they will never have carried out a Hazardous Area assessment and could have little knowledge on how to do so. In addition they cannot rely on equipment having been certified as safe for this hazard before the new legislation, to be safe now because they would not have considered it.

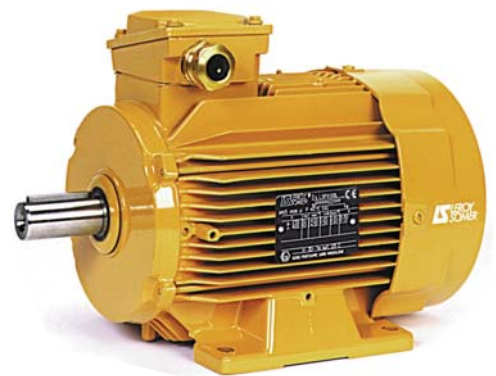
The end user is now required to make a risk assessment of the process in which a potentially dusty atmosphere might exist and clearly mark the hazardous zones and install equipment certified for that zone.

A worrying factor is that some operators in grain handling for example consider this as something that only happens outside the UK and they need not do anything!

In France a tragic accident involving a dust explosion forced the industries, particularly bulk materials handling, to take action more than 4 years ago, which lead Leroy Somer to develop and supply motors and drives which are safe in this environment.

The range known as FLSPX and LSPX consists of motors for zone 21 and zone 22 together with gear units, brakes and Inverters particularly important for materials handling and processing machinery.

This resultant Hazardous area Certified range of motors for, gears and electronic drives, together with the operational experience is difficult to match in the drives industry.



E-mail : atex@leroysoomer.co.uk

Announcing DC Motors from stock



Leroy Somer is announcing a new service - DC motors from stock.

The table opposite shows a short list of motors available with the minimum and maximum power and speed.

Intermediate Armature voltages and consequent power and speeds are also possible.

The range of LSK motors is part of a much wider range of product which also includes Leroy Somer drives which are available on request.

Why not register your interest in our Out of Hours availability

Email dc@leroysoomer.co.uk

With your :

Name

Company Name

Address

Telephone number

LSK D.C. Shunt Wound Motors

IP23S, S1, PTC Thermistors, IC06 with Standard Polyester Filter, Class H Insulation
40°C Ambient, 1000M ASL, 3-Phase Full Bridge Supply, Terminal Box RHS, Force Vent Top, Tacho Provision (REO)
Mounting: 112 - 160 Frame = IM2001 (B35), 180 - 280 Frame = IM1001 (B3)

Frame	P kW	Speed of rotation <i>n</i> (RPM) for Armature voltage <i>U</i>							<i>n</i> max Elec RPM	<i>n</i> max Mech RPM	Torque Nm	Current A	Effcy P.U.	Arm. Ind mH	Resist. Π 115°C	Field Power kW	Inertia kg.m ²	Weight kg	Code
		260	310	400	420	440	460	500											
LSK1124M04	4.7	730						1440	4000	61	30	0.71	25	2.54	0.65	0.053	101	MC0 00 065	
	10.5					1580		2440		63	28.5	0.80							
LSK1124M05	6.7	1020					2000	4000	63	40.5	0.77	14	1.39	0.61	0.053	101	MC0 00 066		
	14.9					2200		3410		65	38.5							0.84	
LSK1324S05	9.7	890					2000	4000	104	49.5	0.75	22	1.3	0.7	0.12	155	MC0 00 077		
	20.					1720		2750		114	48.5							0.85	
LSK1324M08	15.1	1040					1660	4000	139	75	0.77	12.6	0.68	0.8	0.15	175	MC0 00 081		
	44					2010		3210		150	73							0.86	
LSK1324VL10	23.5	1240					1980	4000	181	105.5	0.85	8	0.33	0.85	0.2	215	MC0 00 085		
	44					2380		3570		177	99							0.90	
LSK1324XL10	22.4	970					1330	4000	221	107	0.80	7.4	0.39	1.2	0.24	249	MC0 00 090		
	45.8					1860		2410		235	105							0.87	
LSK1604S05	29.6	1010					1510	4000	280	137.5	0.83	4.9	0.35	1.3	0.45	285	MC0 00 095		
	5					1770		2600		286	130							0.89	
LSK1604S06	37.5	1250					1870	4000	287	166.5	0.87	3.3	0.2	1.3	0.45	285	MC0 00 096		
	68.5					2380		3300		275	150.5							0.91	
LSK1604M07	46	1070					1710	4000	411	203	0.87	4.1	0.169	1.6	0.55	325	MC0 00 102		
	83.8					2040		2840		392	184							0.91	
LSK1604VL12	69	1230					1840	4000	536	305	0.87	2.4	0.083	2.1	0.65	450	MC0 00 115		
	138					2360		2800		558	300							0.92	
LSK1804M05	57.5	940					1320	3600	584	260	0.85	3.6	0.1	1.9	0.7	480	MCC 00 132		
	112					1800		2340		592	245							0.91	
LSK1804L06	77.8	1100					1370	3600	675	340	0.88	2.6	0.065	2	0.8	515	MCC 00 139		
	143					2100		2520		648	310							0.92	
LSK2004M08	175						2100	3200	756	375	0.93	1.56	0.063	2.4	1.3	630	MCC 00 143		
	83.9	940				1885		1500		852	363							0.89	
LSK2004L11	168						2500	3200	852	363	0.93	0.95	0.033	2.7	1.5	710	MCC 00 145		
	184	1210				1750		2100		1001	395							0.93	
LSK2254L11	119	900					1450	3000	942	505	0.91	1.1	0.03	3.2	2.4	920	MCC 00 157		
	196					2330		2700		802	420							0.93	
LSK2254VL14	129	1060					1200	3000	1364	540	0.92	0.72	0.024	3.2	2.7	1000	MCC 00 149		
	254					1750		2300		1387	540							0.94	
LSK2504CM03	166						1400	3000	1498	695	0.92	0.2	0.023	3	4.1	1400	MCC 00 152		
	298	1110				2200		2700		1295	635							0.94	
LSK2504CL03	189	920					1540	2100	1626	800	0.91	0.23	0.025	3	4.6	1500	MCC 00 153		
	333					1960		2100		1623	800							0.94	
LSK2804CM06	189						1080	2100	1962	800	0.91	0.13	0.0082	5.5	5.75	1800	MCC 00 154		
	376	920				1770		2070		2029	800							0.94	
LSK2804CL06	269						1250	2000	2792	1100	0.94	0.15	0.0099	5.5	6.9	1900	MCC 00 155		
	517	770				1775		2000		2782	1100							0.94	
LSK2804CL06	269						1040	2000	3336	1100	0.94	0.15	0.0099	5.5	6.9	1900	MCC 00 155		
	517					1480		2000		3336	1100							0.94	



AC GEARLESS lift replacement indicates quiet revolution in independent lift market



Quiet, low maintenance, high efficiency

A major refurbishment of a Birmingham office block has one feature that points the way to a quiet revolution that is taking place in the lift market. The 12 floor Axis Building, perhaps better known as Stanier House, features the first eight-car AC gearless control systems installed by independent UK company, Liftec Ltd.

The £960,000 system features a new AC gearless matched drive/motor combination from sister companies Control Techniques and Leroy Somer, giving major user advantages including quiet, smooth operation, low maintenance and a dramatic 35% improvement in efficiency.

Ove Arup, consultants for the project, became convinced of the advantages of replacing the existing gearless Ward-Leonard type DC system after seeing a similar AC gearless installation in Ilford – and the cost saving was a further important consideration.

The design, programming and building of the control system was the responsibility of Lifestore, who built the drive panels and supplied their M6809 ADS (advanced dispatch system) master control.

Liftec installed the panels for the eight lifts, each with a Control Techniques 37 kW Unidrive LFT AC

drive with a sin/cos option module, controlling a Leroy Somer 280M 8-pole asynchronous motor fitted with sin/cos encoder to provide position feedback to the controller that provides an analogue speed reference to each drive.

“The option to overhaul the existing system and put in new DC drives was considered,” says Liftec’s Jeff Nokes, “but the disadvantages of noise, high maintenance and low efficiency/high energy costs would have remained. We believe that AC is the future and the combination of better performance and reduced running costs was a very persuasive argument.”

The new system gives 2.5 metres/second (500 fpm) running speed, with an improvement in efficiency from around 50% to an estimated 85%, giving a saving in running costs. Perhaps more significant over the lifetime of the system is the dramatic reduction in maintenance – “and the user isn’t tied into expensive one specialist supplier service contracts on the drives and motors,” adds Jeff Nokes. “It’s all standard kit.”

Control Techniques Unidrive LFT is specially designed for the lift market. Offering open loop, closed loop or servo operation via simple parameter selection, the drive is packed with features as standard, including an on-board PLC option for speed profile generation and call handling control,

a braking unit on-board, an encoder feedback module and high switching frequency for an ultra-smooth ride.

The Leroy Somer 8-pole asynchronous motor has a full load torque of 1590 Nm and a maximum acceleration torque of 2650 Nm, with a maximum suspended load capacity of 8.5 tonnes. Each motor has a non-standard sheave of 700-mm to give increased torque. The brakes and sheaves are demountable to facilitate ease of handling and to reduce weight.

The M6809 controller from Lifestore, is a versatile, robust generic controller that is field-proven and very reliable. It has an easy-to-use interface with clear LCD display, data logger with real-time recording of 100 different types of events and floor position, car direction, door status and lift status graphical displays.

A hand-winding system was fitted for emergencies.

Users of the building have noticed an improvement in call handling and response times and have commented on the quiet operation of the lifts.

“This was the first AC gearless job we have done in the UK, and it went like clockwork, thanks to the support from Lifestore and Control Techniques,” says Jeff Noakes.



Watson-Marlow Bredel launches new 520RC Peristaltic pumphead

Watson-Marlow Bredel is launching the 520RC pumphead for its 500 range of industrial pumps for chemical and industrial processing applications.

The 520RC pumphead, with an increased capacity of 4.6 litres/min, is ideal for the industrial market due to its chemical resistance and exceptional physical robustness.

The new pumphead is built to be strong, reliable and safe – important factors in a product designed to pump hazardous or expensive fluids in industrial processes where even slight inaccuracies can be costly or pose a risk to the environment.

The 520RC pumphead's main construction material is PPS (polyphenylene sulfide) which provides a vital combination of dimensional stability, impact and chemical resistance - its physical properties even out-perform aluminium alloy. Increased track diameter and large occlusion rollers, reduce tube stress and help prolong tube life by up to 20%. The easy-release rotor clutch and tube clamps enable operators to make tube changes in a matter of seconds when required.

520RC senior product manager, Rob Mead, says: «The criteria for the development of this pumphead was focussed to meet the high demands of chemical and industrial processing industries. Added to that was the requirement

to further reduce whole-life-costs, an important consideration for process engineers».

The pumphead is able to take harder grade tubing such as CHEM-SURE which is a layered composite of expanded PTFE and high grade fluoroelastomer, enabling a new range of chemically aggressive products to be handled reliably and safely.

Five close-coupled drive options add to the 520RC pumps versatility. Among the drive options is the Varmeca integral inverter drive providing 10:1 speed control, constant torque, built-in electronic protection, and extreme simplicity of operation, offering users exceptional value for money.

For more information contact Mike Sullivan or Heather Beale, Watson-Marlow Bredel Pumps on Tel: 01326 370370 or Fax: 01326 376009





A unique concept

The GA principle is an extremely simple one: customers raise their orders from the products referred to in the GA catalogue without having to consult their suppliers and choose the delivery date themselves, observing the rules defined in the catalogue.

To make sure this service is reliable, Leroy-Somer have set up an efficient commercial organisation so that they can manufacture limited quantities of products and components within extremely short deadlines and logistics for delivering the equipment on the date chosen by the customer.

The GA is expanding – welcome to electro-mechanical engineering

Already available with numerous options for all standard motors, for certain ranges of adapted motors (ATEX for example) and for ranges of variable speed motors, the GA offer today extends to electromechanical engineering.

Electromechanical engineering is still a difficult sector to systematise. Unlike a conventional motor offer, selecting a geared motor for a particular application is even more complicated. A lot of parameters have to be considered: torque, speed, fixing, operating cycle, position of the output shaft, etc.

For the electromechanical division, guaranteeing this availability would be an enormous challenge! While the motor GA offer already has over 500,000 references, the new

Guaranteed Availability (GA): Leroy-Somer's strong link

When a customer raises an order, he has to know the exact date on which it will be delivered. The Guaranteed Availability has been developed to meet this need, mainly for non-repeat orders or orders for a limited number of items.

geared motor catalogue alone has over 1,000,000 distinct references.

The new GA catalogue

A new catalogue has had to be created which, while still easy for the customer to use, includes every possible combination. Unlike the motor catalogue, selection is made directly based on the product's name and not on the code.

The catalogue is organised around a few principal subject areas, including the main geared motors:

- fixed or variable speed standards,
- for general use,
- for particular areas such as food processing or explosive atmospheres (ATEX dust zone 21 and 22),
- for specific applications such as cranes or travelling cranes.

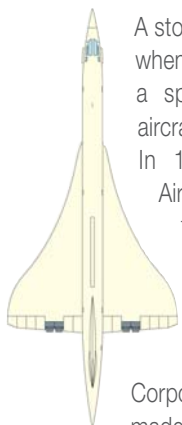
There is an extensive choice of products available. It includes all the usual technologies and ranges: helical gears (Compabloc, Orthobloc, etc.) helical gears and worms, as well as the combination of these different reduction gears with the main motor ranges (standard, specific for LSMV variable speed, with Varmeca integrated variable speed drives, with or without FCR brake) and all the conventional motor options.

With the arrival of electromechanical engineering, the GA offer is expanding. The majority of Leroy-Somer products are now available without prior consultation and can be delivered on the date and at the location determined by the customer!





End of an era – The end of supersonic passenger flights?



A story that started as far back as 1943 when the British government first issued a specification for an experimental aircraft capable of exceeding Mach 1.5. In 1956 the Supersonic Transport Aircraft Committee was set up and by 1959 a report was produced on recommendations for two types of supersonic airliner.

The design study contract was awarded to British Aircraft Corporation in 1960 but the government made it a condition that they find an international project partner.

Approaches were made to the USA, Germany and France, however in the USA they had their own ideas for supersonic airlines which were far removed from the



BAC concept, Germany thought the industry was not ready for supersonic travel but the French were very enthusiastic bolstered by their very successful rear-engine Caravelle.

So began the collaboration between BAC and Sud-Aviation, which was to produce the world's only ever supersonic passenger airliner travelling at Mach 2 and to be known and loved by everyone CONCORDE.

In the heyday 50,000 people were working

on the Concorde bringing French and British engineers in a close working relationship.

Significant dates

First flight of Prototype 001 on March 21st 1969

First Transatlantic record flight of 3hrs 33mins from Washington to Orly by Preproduction 02 in September 1973

First Commercial flight made on January 21st 1976, which represented 20 years from concept to reality.

Concorde was expected to continue in service until 1993 a technical review moved it to 2010 however:



1.

The last ever Flight of Concorde, Production model 216 returned to its design home of Filton on November 26th 2003 bringing to an end 35 years of supersonic flight.

Technical Data

All up weight of 185 tonnes consisting of 95 tonnes of fuel capable of travelling at 1300 mph

Overall length 202 feet 4 inches (61.66mtrs)

Nose temperature at supersonic speed 127 degrees C

Aircraft grew in length by 6 inches (125mm) at supersonic speed due to heat expansion.

British Airways had 100 seats and Air France 92 seats although aircraft was certified for 128 seats.

One of the first technical problems to overcome, seeing where you are going, became a trademark of this most remarkable aircraft reminiscent of a giant swan when landing and taking off, can be seen in the photographs, the droop nose. (kind permission of Dave Entrican)

Concorde needed to be streamlined for supersonic flight, with a very long pointed nose to reduce drag and improved aerodynamic efficiency. During take off and Landing Concorde flew with a very high angle of attack (high nose angle) required by the way the delta wing produced lift at low speeds. At these low speeds with the high attack angles the streamlined nose would have prevented the pilots seeing correctly during take-off and landing operations, so a unique solution had to be found.



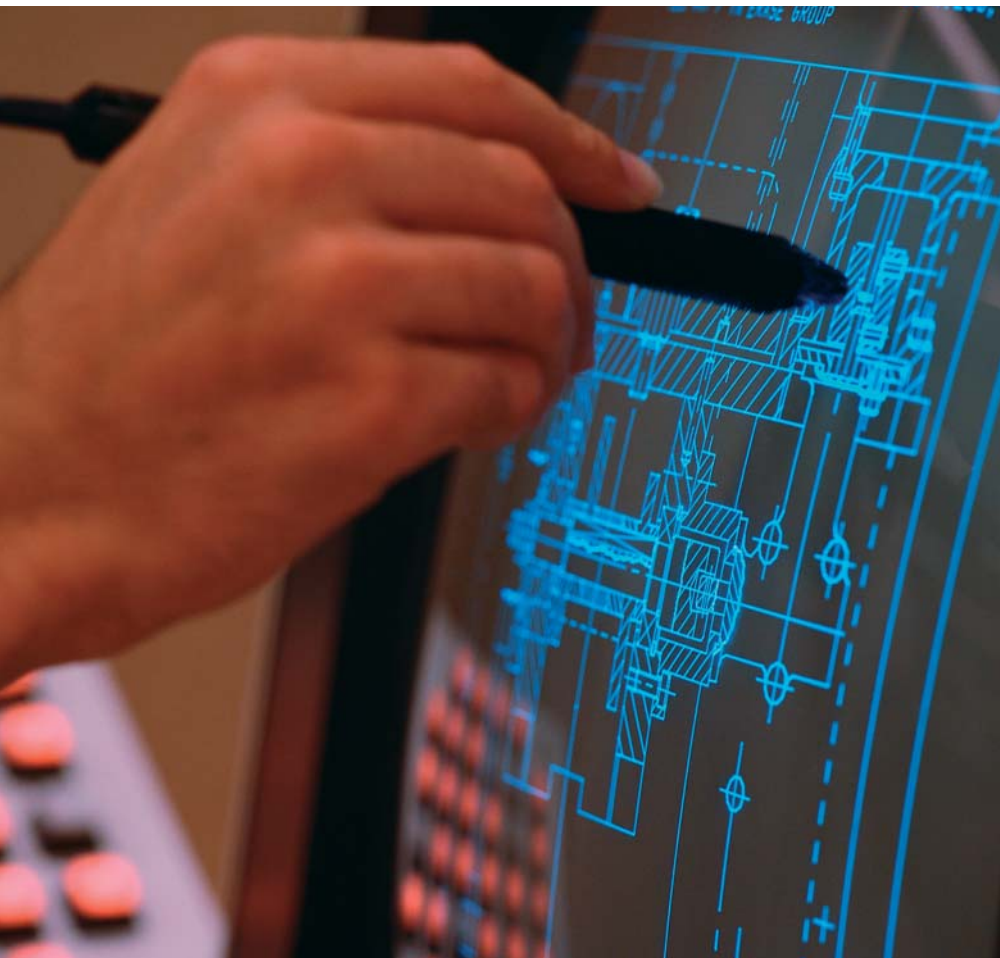
2.



These photographs (1, 2, 3) were taken by Dave Entrican at the last ever flight of Concorde arriving at Filton November 26th 2003. Framed photographs like these can be obtained from his website www.orange-skies.com

3.

DMT, the variable speed experts



At the same time, DMT is part of the “Guaranteed Availability” approach, a concept exclusive to Leroy-Somer, who offer their customers the security of knowing that products are available and can be delivered on time. From now on, an LSK motor, whatever its size, can be delivered to the customer ready for use in a few working days across the whole of Europe!



Today, Leroy-Somer have actually become the world variable speed experts, not just in low ratings, but also in higher ratings where direct current motors continue to play a predominant role.

HPM, a technological revolution

More than a simple innovation, industrial electronics and the development of variable frequency drives for asynchronous motors have been the starting point of real technological change. Today, this change has become irreversible and speed variation is an increasingly frequent requirement, whether for developing new machines or renewing existing processes.

Situated in the AGRIERS business park in Angoulême, Leroy-Somer’s Department of Electrical Rotating Machines (DMT) has specialised for over 30 years in direct current motors and variable speed. Unlike the fixed speed, where the only technology available is the asynchronous motor, the variable speed has meant that new types of electrical motors have emerged due to progress in power electronics. Over the years DMT has become a real laboratory for testing new technology and is actively preparing the motor of the future.

Increase in power for the LSK range

In 2000, anticipating the undeniable success of asynchronous variable speed in low ratings, DMT decided to re-launch its range of LSK direct current motors by extending its provision to high ratings. In ratings from 55 kW, the CC motor does in fact have technical performances that are still unrivalled.

Today, DMT produces CC motors up to an axle height of 355 mm or 755 kW power. The LSK range’s performances and reliability have reached exceptional levels.

With this new LSK range, the gamble is rapidly proving to be a winner. Despite a fall in volume in the small sizes, sales of CC motors are increasing significantly overall.



A result of the DMT design office, the new HPM (Hybride Permanent Magnet) technology Leroy-Somer have developed will undoubtedly be a real revolution.

The HPM motor is a brushless drive system and it is four times smaller than a traditional asynchronous motor for identical power. Unlike other CC or AC technology, the HPM synchronous motor runs just as well at slow speeds (60 min-1) as at high speeds (8000.min-1) and has particularly high outputs over the entire speed range.

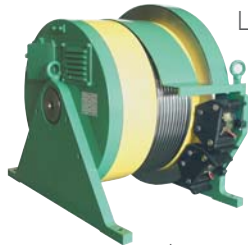
To make the best use of the features of this new technology, DMT is currently developing a particular concept based on close technical cooperation with the customer and called the "systematic approach". The aim of this approach, in partnership with the biggest manufacturers, is to integrate certain functions of the machine that is directly driven by the motor. For example, a traditional motor has to be assembled on a machine with a chassis, belts and a coupling that consists of a shaft alignment system. The HPM technology means that the transmission accessories can be removed in many applications by making new functionalities through variation in speed.

In the end, this approach means that the customer's machine can be considerably simplified and the overall cost of the unit reduced by providing new functionalities.

As Eric Coupart, Director of DMT, states: "the HPM motor has been highly successful in very diverse business sectors, both for high speeds (pumps, fans and compressors) and for slow speeds (lifts, for example). A technological innovation of this kind, patented world-wide by Leroy-Somer, opens up new prospects, mainly for applications requiring high specific torques. DMT has thus become a real test centre for new technologies. The variable speed drive will in the next few years spread to the use of even slower or faster speed motors and will gradually simplify the mechanical equipment involved".

The HPM is currently available for a power range between 30 and 450 kW. DMT is expecting strong growth of over 30% a year for this product in the course of the next few years.

Motors for lifts – The new Z range



Leroy-Somer have been designing and manufacturing traction systems for lifts for over 30 years.

The different product ranges cover all requirements (hydraulic, geared, gearless) and all motor technologies (direct current, asynchronous and synchronous with permanent magnet).

DMT have just launched the new Z range on the market, the result of using the latest technology. This range is equipped with HPM motors with external rotor.



Electric traction market



www.graf-carello.com

Leroy-Somer are very active on the electric vehicle market (airport vehicles, warehouse trolleys, refuse collection lorries, electric buses). Leroy-Somer offer, as required, CC, AC or HPM low-voltage motors that are battery-operated in the main. DMT is thus the only European factory actively involved in the development of CC electric motors for the largest car manufacturers (Citroën, Peugeot and Renault).



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From the 6th to 10th December 2004, LEROY-SOMER has the pleasure to invite you onboard their stand: **Hall 6 - Stand N° 5 D1** where you will discover new products and services which are officially launched during this exhibition.

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