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SAFT INTERNATIONAL

PARTNERSHIP PAGE **8**

Wings of power

The Airbus A380 takes to the skies with Saft batteries

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A new chapter in Saft's history

Just as this issue of Saft International goes to press, I am very pleased to announce that Saft has successfully completed its entry onto the Paris stock exchange. This exciting time for our company is the beginning of a new chapter in our already long history, and a new stage in our development.

What does this new status change for Saft? Firstly and most importantly, for you our customers and partners, nothing will change in the relationship that you have with Saft. The same management and teams will continue to implement the strategy that has brought us success so far. We will continue to supply you with the high-quality, advanced battery solutions and service that you expect from a market leader.

IN THE ISSUE

Saft International – A magazine for Saft's customers and business partners.
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Saft Corporate Communication, 12 rue Sadi-Carnot, F-93170 Bagnolet. Ph: +33/1 49 93 17 07. e-mail: jill.ledger@saftbatteries.com

As a public company, Saft will also benefit from certain advantages such as increased visibility plus access to market capital if we need it in the future. This was a natural step for Saft since we are a global player and a market leader. We have grown and made our business more profitable.

In these pages you will read about some of the exciting projects we are involved in. These range from the Airbus A380 superjumbo — which made its first flight just a couple of months ago with our nickel-cadmium batteries — to the Joint Strike Fighter, which is innovating by using Saft's high-power lithium-ion batteries. They power certain hydraulic functions on the jet.

Saft's business is providing reliable, long-life, advanced battery solutions for mission-critical applications. We intend to continue to do this just as successfully in the future.

John Searle
CEO and Managing Director, Saft

Intensium 1

EVOLVING PLANET

Lunar spy: looking down on moonscape

Everyone on Earth looks up at the Moon. But few look at it from a lunar orbit. SMART 1 is now there, in lunar orbit, observing the lunar "moon-scape". The satellite, launched by the European Space Agency, gets its power from Saft's lithium batteries when it's out of the sun's rays.

"Lots" is the way you could refer to what can still be learned about the Earth's only satellite, the Moon. Several human missions to the Moon have brought back evidence, but much remains to be learned. That's why the European Space Agency (or ESA) launched SMART to its lunar orbit. "SMART" stands for Small Missions for Advanced Research in Technology". In its lunar orbit, SMART 1 is a perfect example of this strategy. SMART1 is a technological satellite that uses a powered electric engine. It ran on xenon fuel to nudge the spacecraft on its 13-month voyage to the moon.

SMART 1 is flying around the moon in an elliptical orbit with one parallel-wired five-cell battery from Saft. The battery supplies the power for the electric propulsion engine when the orbit takes it out of view of solar rays — which power its electrical power generation system in normal periods — once every three or four days.

In addition to providing new information about the Earth's only natural satellite of any significant size, the SMART 1 mission has also been proving propulsion and communications systems.

Mineralogical mapping

SMART 1 is the first probe that ESA has ever sent to the Moon. As such, it is a true pioneer, in addition to the fact that crewed missions to the satellite ended more than two decades ago. For ESA, it's also an opportunity to test the advanced technologies needed for future scientific planetary missions.

The lithium-ion batteries from Saft are part of the SMART 1's advanced technologies. Measuring only one cubic meter, the satellite was designed to maximize space for its scientific payload. By using Saft's Li-ion batteries, not only space but also weight was saved.

Two instruments measure propulsion while another tests efficient communication techniques. A minaturized camera is taking color images of the Moon's surface and another is mapping the mineralogical resources of the Moon.

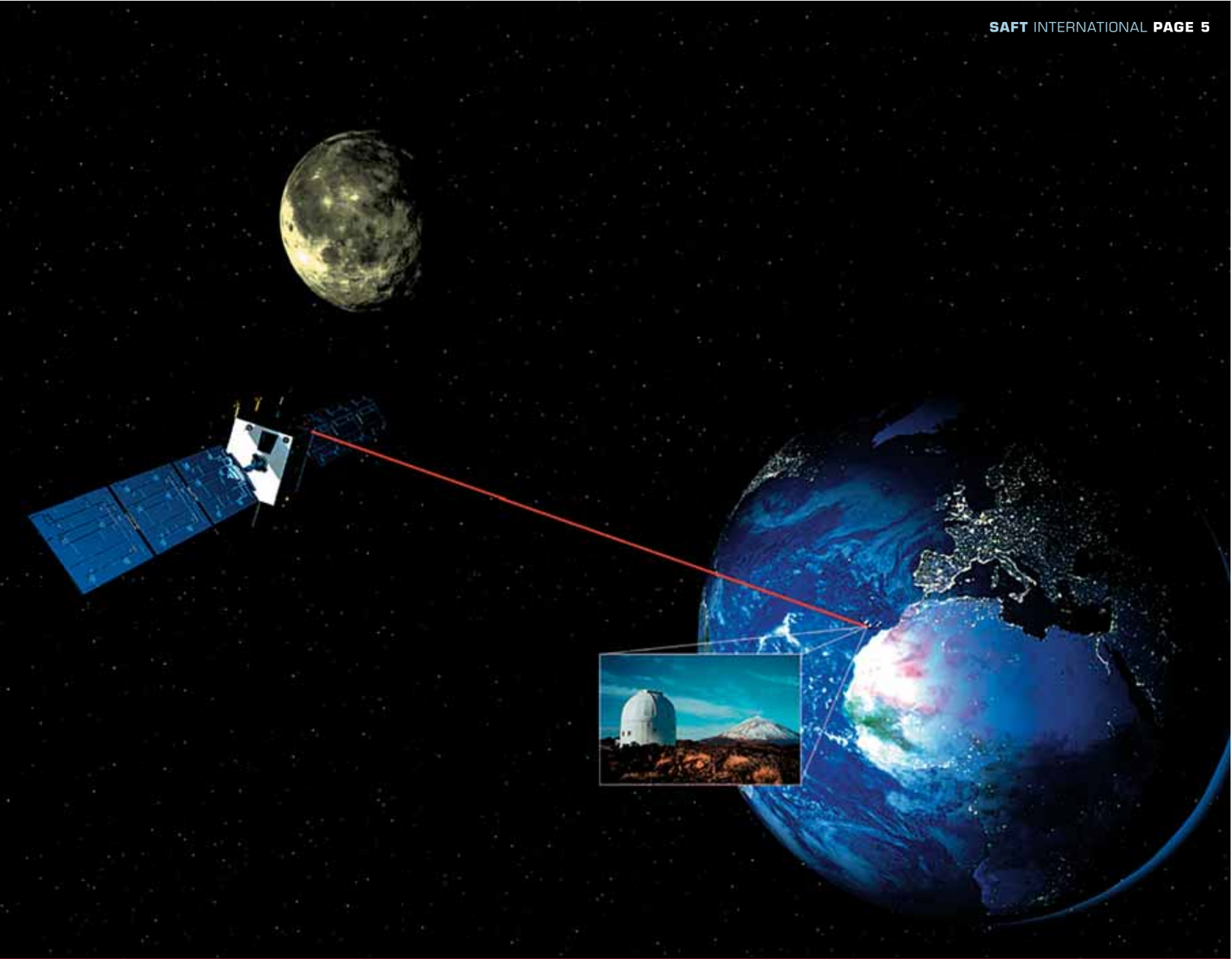
Li-ion space-weight saving

ESA's SMART 1 reduced the battery's weight by more than two-thirds compared to previous battery technologies (which was Ni-Cd). And it takes up less space, allowing for greater scientific payload.

Over the years, Saft has worked in close collaboration with ESA, and not just on satellite payloads. ESA also has to focus on its launchers, where once again weight and capacity figure significantly. The Ariane 5 rocket that lofted SMART from Earth into space also has Saft batteries that are weight- and space-efficient (see box).

Watch for further news from the Moon as SMART 1 continues its orbital mission for a nominal period of six months.

yannick.borothomieu@saftbatteries.com



Rocketing SMART 1 to the moon

An Ariane 5 rocket took SMART 1 into space, ensuring its delivery from the Earth into lunar orbit. Saft batteries were on the spacecraft — and the rocket.

The Ariane 5, likes its predecessors, features Saft Ni-Cd batteries for its various stages. Once the launcher leaves its spaceport, it relies on power from both batteries and generators.

The Saft batteries, on all three stages of the Ariane 5, performed such tasks as powering electronic equipment, activating pyrotechnic devices and delivering pulse-power for actuators. Makers of launch vehicles prefer rechargeable batteries since ground crews can check and repower electricity levels of batteries just hours or minutes before launch.

Ariane 5 offers a lift-off weight of six (metric) tons for the payload. Saft's batteries, on the platform which carries the payload into orbit, cut weight when the customer chooses lithium-ion.

INNOVATION

More success on the F-35 JSF

For the world's next-generation F-35 Joint Strike Fighter (or JSF), **Saft won an additional contract in October 2004 to supply a 28-volt high-power light-weight lithium-ion battery.**

Prime contractor for the F-35 is Lockheed Martin, and Smiths Aerospace is the electrical distribution systems supplier. Saft's 28-V lithium-ion battery will be the smallest and lightest battery now available for the F-35 JSF Aircraft. The Saft Li-ion battery weighs about 50% less than an equivalent lead-acid battery and measures at least a fifth or a quarter smaller. Saft's battery will be part of the Smiths Aerospace F-35 Electrical Power Management System.

Defense aviation is one of the world's most demanding industries, in terms of performance and reliability. In addition, weight is a major factor in determining the performance capabilities of the aircraft. Saft initially won a contract in 2002 to supply a high-power Li-ion 270-volt battery to Smiths Aerospace, earning its first credentials on the international JSF program.

Deliveries as early as 2008

The initial flight of the first pre-production F-35, a conventional takeoff-and-landing aircraft, is scheduled for end-2006. Marine Corps and Naval F-35 variants will undergo sea trials aboard both U.S. and UK carriers beginning in 2008-2009.

Low-rate production is scheduled to begin in 2007, with the U.S. Air Force set to take first deliveries of its operational F-35s in 2009.

del.nary@saftbatteries.com

MARKETS

Flying eyes: cutting battery weight by 50 percent

The Global Hawk RQ-4B unmanned aerial vehicle (UAV) — Northrop Grumman's successor to the highly successful Global Hawk RQ-4A UAV — will be supported **by Saft's powerful, efficient, lightweight lithium-ion (Li-ion) batteries.**

Northrop Grumman's Global Hawk, produced for the United States Air Force and the United States Navy (with potential customers evaluating it for acquisition in Europe, Australia and along the Pacific Rim), is the premier high-altitude, high-speed, long-endurance, long-range UAV. The combination of the aircraft's design performance and onboard sensors make it a critical purveyor of intelligence, surveillance and reconnaissance (ISR) information over wide areas of interest.

Northrop Grumman's decision to use Saft's Li-ion batteries resulted in a multi-year contract to use Saft's new lithium technology in an aviation application. The original model continues to fly with three ultra-low-maintenance Ni-Cd batteries that provide emergency power to mission critical systems in the event of an engine failure.

Both weight and volume were key drivers in Northrop Grumman's switch to Li-ion technology for the new model Global Hawk. The shift to Saft's Li-ion battery technology reduces space requirements and slashes battery weight in half. Saft's contributions of reduced weight and volume help increase the Global Hawk's performance capabilities.

Saft began supplying Ni-Cd batteries to the Global Hawk program during development in the mid-1990s. The Global Hawk delivers real-time images and other intelligence with very high resolution in all weather conditions. Data collected by the Global Hawk's sensor suite provide real-time intelligence to the war fighter.

Global Hawk is combat proven. Two-thirds of its 6,500 program hours were generated in combat operations. Technology demonstration aircraft flew 60 missions in Operation Enduring Freedom (OEF) and 16 missions in Operation Iraqi Freedom (OIF). Indicative of its capabilities, the Global Hawk flew only three percent of the air-breathing imagery intelligence missions in OIF, yet it accounted for 300 tanks (almost 40 percent of Iraq's inventory) and 55 percent of the time-sensitive targets generated to destroy air defense equipment.

A technology demonstrator vehicle has flown more than 108 additional missions in support of the global war on terror. Global Hawk brings together an unprecedented combination of capabilities (endurance, payload/electrical power, speed and altitude) that dramatically increases U.S. theater ISR collection capabilities for decades to come.

Exciting, powerful, efficient technology

Saft's Li-ion battery technology has achieved significant milestones in aerospace applications. During a high-profile NASA mission on Mars, the Spirit and Opportunity rovers marked the first application of Li-ion batteries in an interplanetary operation.

There is no doubt that this exciting, more powerful and efficient battery technology is creating opportunity across the entire aerospace industry. Saft is offering its Li-ion battery technology to leading-edge commercial and military aviation and satellite programs around the world.

gary.mcmillan@saftbaatteries.com

PARTNERSHIP

21st-century aviation technology

The Airbus A380 sets many records in terms of technology. To provide energy on the ground when no other power source is available, to support the "no-break" DC network to start the jet's auxiliary power unit (APU) and to provide energy in emergency conditions, **Airbus selected Saft's ULM® (Ultra-Low Maintenance) nickel-cadmium battery technology.**

The setting couldn't have been more impressive. On the airfield at the Toulouse (Blagnac) airport in France, thousands came to watch the event: the first flight of the Airbus A380 superjumbo. Millions of others watched on their TV as the event was carried live worldwide. Few, however, were aware that Saft's ULM® nickel-cadmium (or Ni-Cd) batteries were on board, ready to supply emergency power and start the APU, if that had been necessary.

Saft is not a newcomer to Airbus. All of the aircraft manufacturer's jets fly with Saft batteries. Indeed, two out of three aircraft worldwide are equipped with Saft Ni-Cds. The battery technology on the A380 is in fact already flying on Airbus's A330s and A340s.

Saft's ULM® technology substantially reduces operating costs for airlines. This is due to the battery's plastic-bonded negative electrode and its sintered positive electrode, along with a specially designed separator.

Successful first flight

The A380's wings lifted 421 metric tons (928,300 lbs) into the skies over southwestern France, the most ever for any commercial airliner to date. The flight lasted three hours and 54 minutes. A crew of six was on board. The pilots confirmed that the new aircraft had handled as expected.

Prior to its first flight, the A380 successfully completed a series of ground tests. They started in the summer of 2004 when the electrical power was turned on for the first time (the so-called "power-on" milestone). Since then, Airbus has systematically and exhaustively tested all A380 systems, from hydraulics to electrics plus much more. Saft's batteries play a mission-critical role as part of the aircraft's electrical system. Airbus has optimized the A380's flight performance and economics by incorporating cutting-edge technologies.

Saft's ULM® battery meets the specific needs of the A380 since it operates around the clock. So the battery is fitted with sensors that enable its state of health to be monitored continuously.

The Airbus A380 made its first flight, successfully, on April 27, with Saft's ULM® Ni-Cds on board.

Maintenance features

Saft's Ni-Cd ULM® is the industry standard in aviation. More than 11,000 batteries have been manufactured since the technology was introduced in 1992, and fly on both commercial and military aircraft. The plastic-bonded/sintered electrodes reduce the battery's weight and also the topping-up needs, in terms of electrolyte. Maintenance is cut in half, resulting in a significant reduction in operating costs for airlines.

Airbus has also recently selected the same Saft ULM® battery technology for its A400M, the military transport aircraft now entering development.

bernard.weber@saftbatteries.com

INNOVATION

Lithium-ion power for telecoms networks

Telecoms towers, used as "base stations" in the exploding business of mobile communications, are rising fast in value. The right locations are rare, the towers are tight, and they need to operate in all circumstances. Even if the mains power goes off. **Saft's Intensium 1 Power is a new backup solution for mobile operators.**

Above you is an antenna. (You may not even see it.) In your hands is a cellphone. You want to make a call. Only problem is, the mains power has just gone off in the district.

Except, that's not a problem, since the cellphone antenna keeps working. How is that possible? Perhaps thanks to a Saft Intensium lithium-ion battery. One of several Saft battery solutions that are now available to telecoms operators — or those who install their networks.

Because real estate options are limited, those telecoms towers that exist are rising in value. Operators need them, especially for new value-added third-generation (or 3G) services, like video and data communications.

Nobody can compete with Saft's Intensium 1 Power offer, the first rack that's designed to be installed in exactly the height, or 1U, set in telecoms standards. ("1U" refers to "one unit".) In other words, it slips into a regular telecoms rack without a whisper.

Optimized design

Intensium 1 Power has been optimized to provide the ideal source of safe, reliable and maintenance-free backup power for the new generation of micro base transceiver stations (Micro-BTS) that mobile operators are installing. This is particularly important for operators with a license for 3G networks. The density of their network is greater than for the 2G (or GSM) networks, and the service performance is more critical.

Micro-BTS installations are mainly located in urban areas. Their range is usually measured in terms of hundreds of meters (or yards), rather than kilometers (or miles). They represent a particularly demanding application for backup batteries due to constraints on space. Plus the temperature extremes, since they mainly face the demanding rooftop condition of operating under full-summer sunlight — and during mid-winter freezes.

Extended lifetime at high temps

Intensium 1 Power represents only one of several battery technologies that Saft supplies to telecoms operators for backup power supply, in outside installations or in their central office. These include nickel-cadmium, nickel metal-hydride and lithium.

The small, flat and rechargeable cell that is at the heart of Saft's Intensium 1 Power is an ideal combination of light weight, small size, high power and operating reliability. It's the Saft MP, or medium prismatic, built with cobalt-based sealed lithium-ion technology. Even at high temperatures, it features an extended lifetime. At a constant 40°C, Intensium 1 Power runs for five years; and at 30°C it lasts 10 years.

Intensium 1 Power was rolled out at a major U.S. trade show in 2004 and has since been garnering major interest among telecoms operators for such applications as Macro-BTS, optical node units, hybrid fiber-coax units and even for customer premises equipment.

joel.brunarie@saftbatteries.com

Handling power breaks for micro-BTS

Mains power outages for a micro base transceiver station are often short, lasting a matter of minutes or so. Saft's Intensium batteries are a perfect solution for keeping the phone service running.

The Intensium 1 Power 3000, comprised of two strings of lithium-ion batteries, generates 48 volts of power. The battery is optimized to handle up to 20 minutes of power failure. It provides constant 3-kW power over a five-minute period. By that time, the mains power has returned. And mobile phone service has not been interrupted.

2005 FROST & SULLIVAN Technology Innovation Award

Technology

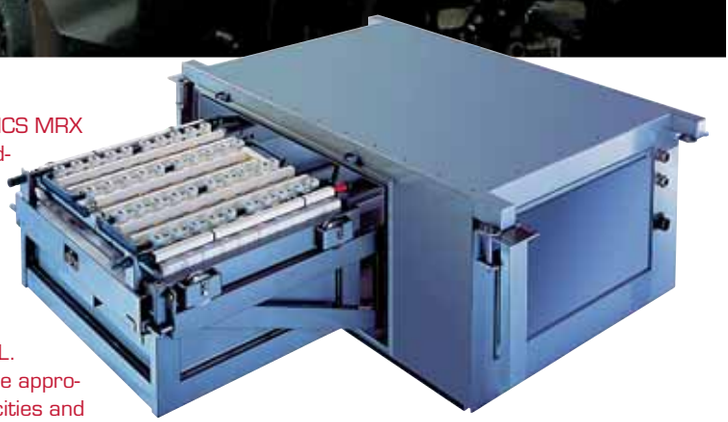
Saft's Intensium 1 Power unit has won a top prize from Frost & Sullivan, the Technology Innovation award. It was made at an end-May Frost & Sullivan Industrial Technologies banquet.

Frost & Sullivan, a global growth consulting company, has bestowed its 2005 "Battery Company of the Year Award" and its "Award for Technology Innovation" on Saft, in particular for the new Intensium 1 Power telecoms backup battery.

The award, according to a Frost & Sullivan research

Siemens turns to the MATRICS MRX battery system for Turin's metro

Siemens, the original equipment manufacturer for the light-metro trainsets that it's building for **Turin, in Italy, has switched to Saft's latest railway battery system technology.**



Siemens selected Saft's MATRICS MRX battery system due to its "plug-and-play" capabilities, among other characteristics. The Saft battery provides backup power for the safety and auxiliary circuits of the trams, Siemens's new VAL 208.

The VAL 208 is the latest, lighter and wider generation of VAL. Siemens developed it to provide the appropriate transportation solution for cities and airports.

To save space and weight on the cars, Siemens asked Saft to design a new, fully integrated on-board battery system. It replaces the previous battery, where loose cells were assembled into a battery box. Saft in fact engineered an entirely new battery system. It is comprised of 54 MATRICS MRX cells that come in a customized stainless-steel box. The system includes switches, fuses, thermal sensors, connectors and a centralized water-filling system.

Power flexibility

The new integrated MATRICS MRX system from Saft also features reduced manufacturing time and costs for Siemens, one of Saft's strategic railway partners. This is because the battery is supplied on a "plug-and-play" basis. It arrives from Saft and is ready for installation. It fits neatly into the space under the VAL 208's floor.

Saft's design offers additional flexibility. A range of 90-, 100- or 115-Ah MRX cells can be selected and assembled in the same battery box to enable the battery's capacity to vary and meet local project needs. These can extend to larger capacity for lower operating temperatures.

The MATRICS MRX design that Saft has engineered is also extremely reliable. It doesn't suffer from the "sudden-death" phenomenon which can afflict other battery technologies. It operates in temperatures ranging from -30°C to +70°C.

And it features a centralized water-filling system. This simple-to-use feature fills all the cells in sequence from one central point without any moving parts. This capability substantially reduces the battery's maintenance requirements since it enables cells to be topped up quickly, safely and accurately. This in turn maximizes the battery's useful life.

holger.schuh@saftbatteries.com

Most attractive features

Here's a quick rundown of the features that make the Intensium a highly attractive backup power solution for telecoms networks.

- Maintenance-free
- Remote control: check and control state of charge, state of health, alarm levels and operating conditions via a display and remote communications .
- Extended lifetime at high temperatures: a 10-year life at a constant +30°C.
- Plug-and-play capability: a complete system with an integrated battery protection and communication interface, fuse and power switch
- Safety: a five-level redundant safety design in case of component failure or abusive conditions.

2005 FROST & SULLIVAN
Battery Company of the Year Award

Innovation award

analyst, reflects Saft's investments in "technological innovation, highest-quality products, a well-trained and knowledgeable work force, prompt customer service and a diversified portfolio of products and chemistries." All these factors play a part in Saft's growth.

The analyst noted that Intensium 1 Power, "besides being environmentally friendly…, offers advanced features such as scalable solutions, [an] integrated system, small size, light weight, low maintenance, high operational reliability, extended lifetime and safety."

POWER SOLUTIONS

Torpedo battery unit opens

Poitiers, France, is the happy home of a new high-security unit that produces **batteries for the U.K.'s Sting Ray Mod-1 torpedo.**

The new Poitiers facility was formally opened last year by managers from the U.K.'s BAE Systems (the prime contractor on the Sting Ray) and from Saft as well as by local officials. The anti-submarine torpedo gets its power from a Saft silver-chloride magnesium battery once it hits the water. That's because its electrolyte is in fact the sea water, in which it is bathed after launch

Battery deliveries to the U.K.'s armed services extend from 2004 through the end of 2010. "Mod 1" refers to the first modification of the Sting Ray torpedo since its introduction by BAE Systems. Sting Ray is a defense weapon that the U.K.'s armed forces use to defend against attacking submarines. Mod 0 (the original version) was launched in the 1980s.

The new, ultra-modern facility at Poitiers has been open since September 2004. Chris Kelly, director of purchasing for BAE Systems' underwater division, said: "The development of the Poitiers site to manufacture Sting Ray's battery recognizes Saft's international expertise in this technology and underscores our trust as we begin the production phase."

Industry leadership

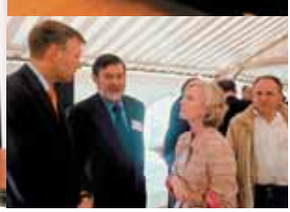
Saft's contract with BAE Systems enables Saft to ensure its industry leadership in military power products. The Sting Ray Mod 1 will be boarded on helicopters, aircraft and light vessels of Britain's armed forces. It is essential that the main energy source of a weapon be "inert" until the moment it is fired. That's why Saft silver-magnesium chloride batteries come to life only once they hit the sea water.

The addition of the Sting Ray dedicated facility increases the sales of Saft's Poitiers facility by 8%.

tristan.grivel@saft.batteries.com

The new Sting Ray line

John Watkins from BAE Systems and John Searle inaugurate the new facilitiy in Poitiers



Shears & vines: cutting-edge technology

New cutting shears from Infaco, powered by Saft's batteries, make it easier to clear out branches in vines. **There are even two operating modes, to enable the user to make the right choice, depending on the vineyard and user preferences.**

Shears from Infaco (photo) feature the ultimate in ergonomy…and in technology. The latest tool, the Electrocoup F3005, makes it the most advanced and versatile pruning shear ever sold, with more power and features than any of its predecessors.

The new shear operates in two ways. As Olivier Fraysse explains, "The mode known as 'proportional' offers the ultimate performance in terms of safety and precision. The blade follows the speed of the trigger." Fraysse is technical and production manager at Infaco.

Alternatively, a "pulse mode" is based on the traditional Electrocoup trigger action, delivering more power and faster speed. These performance capabilities are due, in part, to Saft's nickel-metal hydride (or Ni-MH) battery. Mr Fraysse points out that Infaco has been using Saft's batteries for five twenty years, and that sales of shears account for 90% of Infaco's activity.

According to Mr Fraysse, Infaco sells the Electrocoup from its home base in Europe to customers around the world, including in Asia-Pacific and the Americas.

Prize-winning performance

Compared to its predecessors, the F3005 features a more efficient motor. Its 48-volt battery from Saft is comprised of eight 6V blocks assembled in series. Each block is made up of five cells. The user wears the battery pack in a belt around the waist. The belt's ergonomic design makes its 2.4-kg weight almost unnoticeable. "It's very comfortable to wear," notes Fraysse.

The F3005 is the sixth generation of shears that Infaco has developed in its 20-year history. First invented in 1984 by Daniel Delmas, the cordless electric shears won the Golden Palm Award the next year for innovation at a trade show in France. The first 300 shears were sold during that event. Following this success, Infaco has continued to remain at the cutting edge of its industry.

Over the past two decades, Electrocoup sales have reached 60,000 units.

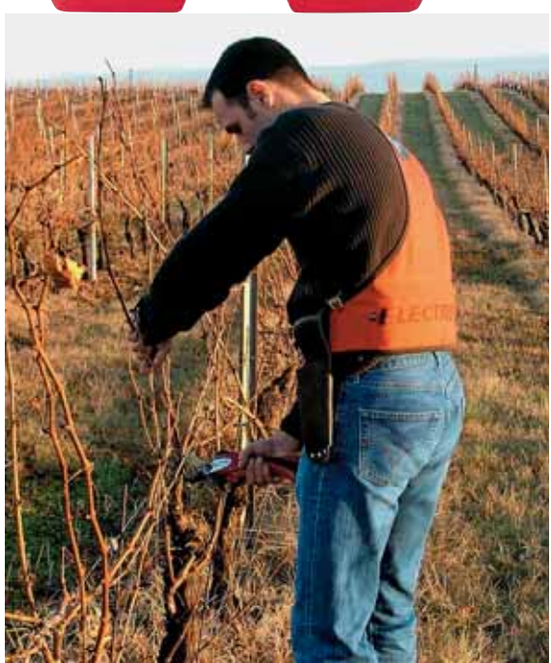
Full-day battery power

Wine growers need to cut their vineyards after the wine harvest, over a period usually starting in late autumn and running over winter and sometimes into spring. During the cutting season, the batteries need to recharge 100-150 times. And they need to stay operational during the entire working day. That's what Saft's VH Cs 3.2-Ah cells do. The battery runs the shears for eight hours without recharging.

Anyone who knows agricultural applications, for any type of tool, realizes that robustness is essential. Tools get thrown around and generally treated to some of the most difficult conditions. Yet, to be productive, the tools —including electrical ones, like the F3005 shears with Saft's Ni-MH batteries —are expected to operate for five years.

Even in these tough circumstances, the Saft batteries perform at the top of the industry ranks. Another guarantee for Infaco's Electrocoup F3005 product, and its users in the vineyards around the world.

olivier.amiel@saftbatteries.com



EXTREME POWER

Remote island power: the Clipperton tale

Clipperton, an unhabited Pacific Ocean atoll belonging to France, is unique in terms of fauna and flora. Two thousand kilometers southwest of Mexico, its five square kilometers (two square miles) are home to many species that don't exist elsewhere. **An expedition led by the explorer Jean-Louis Etienne recently spent four months there, with Saft's lithium-ion batteries for power.**

Totally isolated. Tropical temperatures. And 25 people to keep alive for four months. But not just alive. Because the researchers among them needed not only to eat and drink, but also to consult and update, via a space-based Internet connection, their observations and data banks. Saft's high-energy lithium-ion (or Li-ion) batteries played a mission-critical role in the success of this exploration of Clipperton.

Jean-Louis Etienne, the leader of the exploration team, is no newcomer to Saft's power solutions in extreme environments. For two decades, Etienne has relied on Saft's batteries for missions to the extreme cold of the poles. This mission, however, was different. In the past, as a solo explorer, Etienne needed Saft's power for his own communication and other needs during sub-zero stays. For the Clipperton undertaking, the temperatures were inverted, from -45° C in the Arctic to +40° C in the Pacific Ocean. And from a single explorer to a team of researchers and their support crew. Saft's power solutions not only survived (after customization, of course), but also thrived.

From sun & wind to Li-ion

Saft's power solution consisted in taking power from the sun (via 3-kWp solar panels) and the wind (via two 1kW aeolian arrays) and storing it in two identical high-power Li-ion batteries, rated at 6 kWh. The batteries powered refrigeration equipment, an antenna that linked the Clipperton team via satellite to their "home" (or office) computers. And they also enabled the desalinization plant to deliver up to 250 liters a day of drinking water.

Etienne calculated that if his expedition, which naturally arrived by boat on Clipperton, had used lead-acid batteries, the weight would have been three (metric) tonnes. Instead, with Saft's lithium-ion, it was 250 kg. And the refrigeration equipment, which was bought in Mexico, operated at 110 V. So Saft's battery had to handle still greater drain, due to the transformer between the battery's 220-V output and the equipment's 110-V requirement.

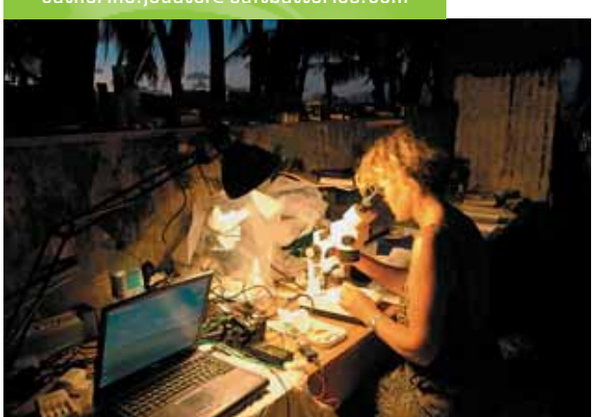
Unexpected power requirements

The Clipperton mission, though well-planned, nonetheless resulted in some power surprises. Researchers worked well into the "dark hours" on their computers, using not just light bulbs but, as one would expect, their Internet connection. This power drain (light + computer) hadn't been anticipated, yet the Saft Li-ion batteries handled it perfectly.

Additionally, media coverage of the scientific expedition put further unexpected drains on power supplies. Three film crews visited the island during the stay of the Etienne team. They all required recharging of their batteries during their stay, including of underwater lighting equipment. Saft's batteries did the job. They supplied 4.5 kWh each day, with a depth of discharge close to 76%.

During the entire expedition, there was no power cut or other battery-related problem.

catherine.jouatel@saftbatteries.com



Remote surveillance

From Bordeaux, France, where Saft's factory produced the high-energy Li-ion cells that were assembled into batteries at Poitiers, engineers were able to track the system's performance, enhancing its efficiency.

PARTNERSHIP

Service network for industrial batteries

More than a hundred engineers at a dozen or more battery service units around the world have taken a Saft training course to qualify as battery service station engineers. The purpose? Certification on correct operation and maintenance of Saft's industrial batteries. **The value? Return on investment, and more efficient operation for customers.**

"Get the most value out of your industrial battery" could be the slogan of this latest campaign by Saft. A training course of up to five days enables technicians and engineers to understand how best to treat their battery, including the charger and its operation. Saft engineers who specialize in training, on both pocket-plate and sintered/plastic-bonded electrode nickel-cadmium batteries, provide theoretical input and practical exercises during the course.

Engineers at nearly two dozen service units in the Middle East, North America and Asia have opted for the course in the last year. At the end of the course, they take an exam to test what they have learned. If they pass the test and the on-site audit, they receive a certificate from Saft (valid for one year) stating that they are qualified to maintain Saft industrial batteries.

The service units, which are Saft industrial battery agents or battery maintenance companies qualified by Saft, are located close to the end-users of the Saft batteries. This means that they can intervene rapidly in case of a problem.

Trouble-free operation

When the electrochemistry of a battery is handled properly, the battery operates longer and performs better. Both of these characteristics are obviously highly appreciated by the customer, who obtains greater satisfaction because of this training of the local service units.

Saft's industrial battery training engineers also provide courses directly to the end-user, on the customer's premises, if appropriate, or on Saft premises. Saft operates industrial battery manufacturing facilities in both Europe and the U.S. Its sales and technical facilities are also located in Asia.

The training course also covers installation and commissioning as well as operation and maintenance. It comes with a training kit and guide that participants can "take home" and use as required.

Middle East launch

At the Middle East Electricity 2005 trade fair in Dubai earlier this year, Saft formally introduced its new Middle East network of industrial battery service units. Saft has established a network across the region. The main countries concerned are Saudi Arabia, Bahrain and the United Arab Emirates, to mention only them.

All the service units are audited, enabling Saft to compare them with its own rigorous specifications. The units' staff need to pass Saft's intensive training course successfully.

nehat.doko@saftbatteries.com

"High-tech" doesn't mean "hands-off". Using the space-based Internet connection to Clipperton, Hervé Henry, with Bordeaux University's Laboratoire IXL, was able to check the performance parameters of the two Li-ion high-energy batteries installed at Clipperton. The laboratory has worked with Saft's Bordeaux plant for a decade.

Henry, an embedded systems engineer who also works on electric vehicles and other battery applications, spent 10-15 minutes a day during the Clipperton mission, checking on the Li-ion batteries' condition. "We followed the batteries' state of charge, and how well it was producing and using energy,", he said. One of the two batteries was dedicated to "life" applications, in particular refrigeration. The other gave power to computer applications.