PRESS FILE

Selection of actions, investments and new products with regard to Sustainable Development

Solar Impulse

The Solar Impulse project aims to have an airplane take off and fly round the world only powered and propelled by solar energy, thus without burning fossil fuels and without pollution. To achieve this ambitious goal the current technological limits in all fields need to be surmounted.

Solvay provides its competences in innovative materials for the design and construction of the aircraft, which will fly around the world. 2006 was devoted to designing the aircraft. The prototype is now under construction and the first test flight is scheduled in 2009. Solvay's contribution includes solutions to reduce the aircraft's weight while maximizing its structural effectiveness as well as the high-performance materials for the thermal protection of the pilot.

Solvay is as first main sponsor and as technological partner associated with the Solar Impulse project. The venture was started by Bertrand Piccard, and is a perfect symbol of the major efforts and of the technological leaps needed to enter the new territories implied by sustainable development: excellence, an entrepreneurial mindset, control over energy, and innovative materials.

For the Solvay Group, this project embodies fundamental values:
• Conceptual values of openness to the world issues, encouraging dialogue and reflecting the Group's culture and willingness to engage in collaborative efforts.
• Ethical values including a sensitivity to ecological challenges, with positive and practical awareness of sustainable development, leading the search for alternatives to non-renewable resources, particularly of energy: an issue facing all technology-based firms.
• Business-oriented values, allowing sustainable growth to be achieved through innovation, and promoting a positive and credible image for the Group and its entrepreneurial spirit.

Many initiatives have shown a commitment, since the Solvay Group's origin, to innovation and calculated risk-taking helping to create conditions for a more sustainable future: from the creation of scientific institutes, through support of scientific expeditions (Antarctica, tropical rain forest) for more than a century to the current involvement in the Solar Impulse project.

For more information about Solar Impulse, please visit www.solarimpulse.com

A process for treating contaminated sediments, from the banks of the Meuse to the industrial port in Venice's lagoon

Solvay has developed NOVOSOL®, a process that provides an adaptable solution for the management of a wide range of contaminated mineral residues. The disposal of this kind of residues in landfills is problematic and their treatment is very costly. One of the applications of NOVOSOL® is the stabilisation of contaminated sediments of rivers and canals. A significant proportion of the sediments in rivers and canals in the industrialised countries are severely contaminated, which makes the dredging and disposal of these sediments very challenging.

Nevertheless, most waterways must be dredged regularly in order to prevent silting up, which hinders river traffic and increases the risk of flooding at times of high water. Keeping the waterways clear for traffic is also important to support the freight transport shifting from road to the waterways and to reduce the freight transport greenhouse gas emissions.

Dredging the sediment is only realistic if value can be derived from the sludges or if the sludges can be put into landfill. However, the sediment's load of pollutants, be it from industrial, urban or agricultural sources, makes it often impossible to derive any value from the sludges and too costly to dispose of them

in a landfill. NOVOSOL® is an efficient solution for the stabilization of the contamination in the river sediments, after which they can be put safely into a landfill.

The Venice Region (Porto Marghera) and the waterways in Belgium's southern region Wallonia are the first to take benefit of this technology.

Other applications include treatment of industrial fly ashes, of car shredder residues or industrial sludge, all containing non-recyclable inorganic by-products. Considerable amounts of these inorganic residues exist and treating these can prove absolutely essential.

For more information about NOVOSOL®, please visit www.novosol.be

Products to disinfect urban waste water without producing undesirable by-products

Re-use of treated urban waste waters in agriculture helps to relieve water shortages. The re-use of urban waste water often comes up against the problem of bacteriological contamination, which either limits or completely prevents recycling of the water for agricultural irrigation. The issue is all the more acute in arid regions, affected by water shortages, where the high temperatures in certain seasons encourage bacterial proliferation.

For a number of years, the municipal waste waters of Milan have been treated with OXYSTRONG®, Solvay's peracetic acid, opening the way to effective disinfection. The procedure is based on a chemical treatment that does not leave any residues, as the product rapidly decomposes.

The USA's Environmental Protection Agency (EPA) recently approved peracetic acid for urban water disinfection. This "gentle" disinfection technique is already used widely in the agricultural and food-processing industries, in dairying and in fish farming, particularly in the Scandinavian countries.

The Food and Agricultural Organization (FAO) of the United Nations considers the re-use of treated urban waste water in agriculture as a sustainable solution to cope with the increase of the world population and the related depletion of water resources for agricultural use.

For more information about OXYSTRONG ®, please visit the product page on Solvay's website.

Humanitarian shelters for difficult climates

Solvay is an important producer of the plastic polyvinyl chloride (PVC), a material which has undoubted physical and sanitary qualities. These properties allowed the development of robust lightweight emergency shelters, called Shelt'Easy, designed to be implemented in humanitarian crisis situations.

A team led by Philippe Bourgain of the Build Valley Company, together with Solvay and its affiliate SolVin, and the plastics processing company Maine Plastiques perfected these lightweight emergency shelters for use in difficult climatic conditions.

Their design provides for an extended lifetime and allows them to meet needs for which tents - the usual shelters in emergencies - are not well suited, such as housing family groups of four to six people and providing them with latrines and showers.

Shelt'Easy shelters are lightweight, easy to erect and dismantle, come at an acceptable cost, and have the further advantage of being self-supporting. The Shelt'UP ($19m^2$) and the sanitary cabin easyCAB ($1m^2$), have been tested in real-world conditions, in Sudan and Chad by renowned Non-Governmental Organisations.
The industrial production is in place, and marketing started in July 2008.

For more information about the shelters, please visit www.easy-shelt.com

Use of biomass to fuel a power station at the Tavaux plant (France)

Solvay's plants use significant amounts of energy. Reduction of energy consumption, increase of energy-efficiency and replacing fossil fuels by renewable primary energy sources are the strategic guidelines by which Solvay is making its plants significantly greener.

Solvay has recently received approval from the French authorities for a biomass thermal power plant which will supply energy to its Tavaux (France) site from 2010. The plant, which will be built and operated by the French energy group Dalkia, will allow Solvay to reduce the fossil fuel consumption of the Tavaux site, while cutting CO_2 emissions by 20%. The energy and steam will be used for chemicals and plastics production, with surplus electricity sold by Dalkia to the French electricity producer Electricité de France (EDF).

The biomass that will be used is not valorised currently and will be gathered regionally. Half of the biomass consumed in Tavaux will come from recycling; the rest will consist of lopped-off branches generated by existing operations of the forestry industry. In addition to the CO_2 emissions avoided, the project will help derive value from local energy resources and assist forest maintenance. The possibility of exploiting the combustion ash for soil enrichment is being studied.

The unit will consume 280,000 metric tonnes biomass a year: 45% from agricultural and food-processing waste, 4% from the cultivation of dedicated species and 51% from fallen branches. The biomass will be brought by train or by lorry where distances less than 100 km are involved. It will result in setting up a full regional supply chain for biomass.

The biomass power plant in Tavaux will require a total investment of EUR 67 million and will create 50 new jobs. The plant will generate both 30 megawatts of electricity and 30 metric tons/hour of steam. This investment gives an impulse to the local economic development on a sound economic and environmentally sustainable basis.

For more information, please visit Solvay's Press Office site www.solvaypress.com

Non-recyclable residues as fuel for a power station in Bernburg (Germany)

Solvay's plants use significant amounts of energy. Reduction of energy consumption, increase of energy-efficiency and replacing fossil fuels by renewable primary energy sources are the strategic guidelines by which Solvay is making its plants significantly greener.

By building a power station at the Bernburg plant, in the east of Germany, fuelled by the non-recycled high-energy part of waste materials, Solvay and its partner, Tönsmeier, are among the first to adopt the new approach of the European Union to managing waste products. The power station will produce both electricity and steam (cogeneration), for the production of sodium carbonate (Na_2CO_3).

The waste materials, called solid fuel residues, comprise a non-recyclable mixture of plastics, wood waste from furniture and buildings, textiles, paper and cardboard. These fuels can replace and economise on fossil fuels, thus reducing CO_2 emissions. In addition, if put into landfill, part of the mixture could undergo fermentation and release methane, which has a potential greenhouse effect which is 20 times that of CO_2.

The plant will be based on innovative technology - and consequently combine the most stringent energy efficiency and environmental performance. Solvay will notably implement Neutrec®, its sodium-bicarbonate based technology for the cleansing of the plant's gaseous emissions.

Construction of the plant began in April 2008 after the successful completion of all relevant consultation and regulatory approval procedures. It is planned to enter service in the spring of 2010. A similar project for Solvay's Rheinberg (Germany) site has been decided.

For more information, please visit Solvay's Press Office site www.solvaypress.com

PVC made from sugar and salt in Brazil

Ethylene is one of the two main feedstocks needed to manufacture polyvinyl chloride (PVC) - together with chlorine, which is produced through a salt-based electrolysis process. Ethylene is generally derived from crude oil. Replacing ethylene derived from crude oil by ethylene derived from renewable resources helps reducing Solvay's carbon footprint.

Solvay's affiliate Indupa in Brazil is building an integrated plant to produce ethylene with ethanol originating from sugar cane. The plant will become operational in 2010 and have a nameplate capacity of 60,000 metric tonnes of bio-ethylene per year.

Indupa's plant in Santo André will become the first site in Brazil producing PVC from renewable resources. This innovation makes it possible to avoid the emission of substantial quantities of the greenhouse gas CO_2 into the atmosphere. Ethylene is mostly derived from crude oil, but by using sugar cane as feedstock, the overall emissions in the production process can be reduced. What's more, the bio-ethylene plant will decrease the plants demand of products derived from crude oil.

For more information, please visit Solvay's Press Office site www.solvaypress.com

Fluorinated polymers for high-performance lithium batteries and ultra-high-energy density capacitators

One of the strategy platforms of Solvay's Future Businesses activity is devoted to sustainable energies. This strategy includes programs for the development of new materials to store energy more efficiently.

Improving the efficiency of the storage of electrical energy is essential to improve the performance of electric and hybrid electric vehicles. A hybrid electric vehicle generally combines a combustion engine with a rechargeable energy storage system to achieve better fuel economy than a conventional vehicle.

Modern mass-produced hybrids prolong the charge on their batteries by capturing kinetic energy via regenerative braking, and some hybrid electric vehicles can use the internal combustion engine to generate electricity by spinning an electrical generator to either recharge the battery or directly feed power to an electric motor that drives the vehicle.

The development of hybrid vehicles could reduce CO_2 emissions by around 30%. All-electric vehicles could even avoid all such emissions if the upstream electricity generation is also able to avoid them.

By 2010, some 20% of hybrid electrical vehicles will make use of the new-generation lithium batteries. The fluorinated polymers produced by Solvay Solexis, an affiliate of the Solvay Group, are ideal compounds for some components of these new-generation batteries. They can be used to make highly adhesive binders for the electrodes, separators between the other components - increasing safety - and even additives for the electrolytes.

Moreover, Solvay Solexis recently struck a joint development agreement with Strategic Polymer Sciences (SPS), specialised in polymeric electronic materials. The agreement is about large-scale production of ultra-high-energy density capacitator dielectric materials based on biaxially-oriented Polyvinylidene Fluoride (PVDF). PVDF-capacitators can achieve about ten times higher energy loads compared to capacitators based on conventional materials.

PVDF-capacitators can be used as temporary energy storage in hybrid electric vehicles. Some of the main benefits from these materials for hybrid electric vehicle systems are lower cost and weight-saving and thus an increased energy-efficiency.

For more information, please visit Solvay's Press Office site www.solvaypress.com

High-performance solution for water-based anti-corrosion paints reducing emissions of volatile organic compounds

Solvay has developed a solution for paints based on nanoparticles of polyvinylidene chloride (PVDC) latex in collaboration with the German chemical company BASF. These water-based paints are highly resistant and adhere strongly to the corrodible surfaces, such as those of steel structures, they are to protect from corrosion.

Moreover, the paints based on nanoparticles, commercialised under the brand name DIOFAN®, have the polymer's barrier properties and its great resistance while releasing only minute amounts of volatile organic compounds when the anti-corrosion paint is applied, ensuring it complies fully to the stringent requirements of European Union legislation.

Emission of volatile organic compounds into the atmosphere during summer causes smog. Smog is formed when nitrogen oxides and volatile organic compounds released from cars, industry and plants mix in sunlight. It can irritate the respiratory system, reduce lung capacity and aggravate asthma. One of the sources of emissions of volatile organic compounds into the atmosphere is quick-drying paints, which mostly are applied in warm and sunny weather.

DIOFAN®, the water-based paints with nanoparticles, is used for this purpose and provides a better protection of human health and the environment.

There are also aqueous dispersions of PVDC used in other applications, such as pharmaceutical packaging.