

2002 Award

Technological innovation for developing countries

The laureates

Joint first Prize
Guy REINAUD - France
Pro-Natura International

The theme

For its 6th award, in 2002, the Altran Foundation for Innovation has chosen the theme "technological innovation for developing countries". The Altran Foundation prize awards technologies that can be transferred to poor countries.



A new generation fuel

Here is a spotlight on the project submitted by Guy Reinaud, President of the Association Pro-Natura International France, entitled "Biomass Charcoal".

The aim of Guy Reinaud's project is to reply to the needs, in renewable domestic energy, of a population of 2 billion individuals living in the tropical regions of Africa, Latin America and Asia, and at the same time fighting against deforestation and climatic changes. The solution? Biomass Charcoal – source of renewable energy – patented and developed by Pro-Natura International. Biomass charcoal produces domestic energy, without emitting polluting gases for the personnel employed or local communities, from non-upgraded biomass, other than wood, in particular agricultural residues non consumed by animals. By reducing the dependence on wood, biomass charcoal protects forests and as a consequence fights against desertification.

Following a demonstration in Senegal, the Minister of Agriculture remarked that the energy produced by biomass charcoal is equal to that of wood charcoal for a sales price per kilo 50% cheaper. Because it does not require changing habits it is preferred by populations using other energy sources. This project has therefore received the support of the Senegal Government but also of other countries such as Mauritania.

« We absolutely needed this grey matter, and a team to help us preparing the industrialisation of the process. I particularly appreciated the involvement of the Altran's consultants who were deeply motivated" Guy REINAUD

Altran Support

Luce, an Altran Consultant, project manager of "biomass charcoal", 2002 Laureate, during the year of support:

"The object of Guy Reinaud's project is to find a new technology that will produce energy for domestic use from otherwise useless organic waste, other than wood.

We work on the stabilisation of the production tool of biomass charcoal, on the thermo-mechanical aspects and on the mastery of thermal exchanges. These two themes, approached simultaneously, have led to the installation of a prototype on a pilot site in the French region of Troyes, a site which will equally serves for a demonstration to potential purchasers." The final aims of the technological support were to double the production capacity, reduce production costs from 50.000 euros to 20.000 euros, and design equipment that would decrease the temperature of biomass charcoal from 500°C to 40°C at the end of the process.

Results

The project has materialized end 2005 with the first pilot implementation in South Africa and Senegal: the Pyro-7 machine has been developed by the company Nesca in South Africa with the support of Areva. The first machine realised in France is used in Senegal since 2007. The team is also working on the Pyri-8 system, 10 times more powerful.

Joint first Prize
Edouard Serras - France
Serras Technologies Director

A Thermopile cell to produce electricity in isolated areas



Focus on Edouard Serras' project "Lufo, the Thermopile lamp".

Edouard Serras' project is a thermopile which produces electricity without an electrical grid or an electrical power unit. The process employed, based on the thermo-electric properties of metals and on the transformation of heat into electricity, involves using a flame from a petroleum lamp to produce enough electricity to power small electrical equipment (radio, telephone...).

To avoid heat loss by convection, Edouard Serras had the idea of automating the assembly of metal wires from thermocouples on a weaving loom to increase production possibilities and to decrease their diameter, to around 0.1mm. The threads are then adapted and shaped to give these thermo-convectors unequalled good value.

With a power of 300 mill watts, the first version, Lufo 1, powers a radio and therefore provides rural populations with access to information, notably in the case of a natural disaster. Besides this, the thermopile has already proved itself: the first 10.000 lamps delivered to the African continent are still going strong. With Lufo, the circulation of information in developing countries is helped and the diffusion of educational programmes to remote villages made possible.

In the near future a second thermopile, with even better value for money and an energy capacity of 3 watts will allow multiple applications, for example recharging a mobile telephone or powering a satellite radio. Another important issue for Edouard Serras is to participate in sustainable development by having the Lufo produced by local populations, within the framework of an agreement to help developing countries and with possible European financing. Edouard Serras is currently negotiating with Senegal, Kenya and South Africa.

"For me Altran represents a team of engineers and entrepreneurs. Their creativity, their professionalism in the fields handled -from mechanical design to marketing and strategy - their enthusiasm and responsiveness in the project management have saved me precious time in the development of my project and opened new horizons. Altran has demonstrated its ability to coordinate a multi-skill project bringing benefit to a wide public".

Edouard SERRAS

Altran Support

The Altran team, which was supporting Edouard Serras, worked on industrialisation terms of this new thermopile, on its design, on its potential for commercial development, on the price optimization, as well as strategy and fund-raising issues for Serras Technologies, the company founded by Edouard Serras. The initial results were significant: a 30% reduction in production costs for Lufo 1 and in particular the development of a more powerful model, the LUFO 3 watts, benefiting from a completely new design.

After the Award

The company SERRAS Technologies has later signed contracts for thermopile system developments in industrial and heating sectors.

The Finalists

Chantal GOUDEAU – France

Less Expensive Baby Food in Southern Hemisphere Countries

Chantal Goudeau – program manager at GRET – presented a project to help improve the feeding of nursing and young infants in developing countries. The product adds a healthy, nutritional and inexpensive supplement to mother's milk.

The innovative character of the winning project lies within the "pulping–extrusion" process, both easy to implement and capable of low–cost production. It has been successfully tested in Vietnam.

The challenge now is to transfer the project to other countries, better mastering the production of equipment and adapting it to local raw materials.

Mamadou Amadou KANE - France

Alleviating Power Cuts in Africa using Solar Power Plants

Mamadou Amadou Kane proposed a project involving solar power plants whose production during daylight hours would be injected into the public network to provide support at times when demand exceeds capacity.

Resolving the problem of electrical power supply would help support general development in the nation, offering a solution to small businesses and craftsmen unable to invest in an electrical power unit.

André GONOD - France

Combustible Agro - composites with Hand-operated Presses

André Gonod's project concerns the production of fuel using waste and vegetable products from agricultural and forestry channels, and does so using hand–operated pumps.

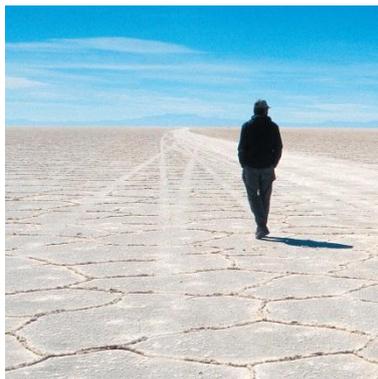
Reclamation of the waste involves turning it into a source of energy or a packing material. The solution of an economical, environmentally–friendly hand–operated press has been successfully tested in Madagascar.

David INFIELD - United Kingdom

Creating a Desalination System using Solar Energy

This is the project of David Infield, a professor at the University of Loughborough (United Kingdom): a desalination system designed to produce drinking water.

It is original on two counts: it uses an electronic controller instead of batteries, which are expensive and have a limited operational life; and it uses a special pump to facilitate significant performance.



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The jury

President of the jury

Vigdís FINNBOGADOTTIR

Chairperson of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST). Former President of Iceland, she was the first woman in the world to be elected Head of State and fulfilled four terms from 1980 to 1996 when she decided not to stand again.

Trevor BAYLISS – Honorary Member – Great Britain

British Inventor.

Rémi CARRIER – Belgium

Logistics Director and coordinator of local implantations for "Medecins Sans Frontières".

Dr Gilles DEGOIS – France

Dermatologist. Founder and president of an NGO which supports medical development in West Africa. This association has brought medical help and training to several African countries.

Gilles DUSSAP – France

Director of chemical engineering and bio-chemistry at the Blaise Pascal University in Clermont Ferrand.

Nicolaas Ahmad HEEREN – Netherlands

Deputy Operational Director of Programmes at "Handicap International", Lyon, France. ...

Carsten HELLPAP – Germany

Doctor in Biology at GTZ. Project manager of the GTZ projects "GATE – Information service on innovative appropriate technologies" and "GATE/NGO Regional Co-operation".

Prof. Francesca A. IACOBONE – Italy

Mathematician. Director "Public Affairs" Europe at EURO PARTNERS & ASSOCIÉS. Member of the Board of Directors of ENEA (Italian Agency for Environment, Energy and New Technologies).

Pierre JUDET – France

Economist. Specialist of industrial development issues. Researcher and professor Emeritus at the

University of Social Sciences (Pierre Mendes-France in Grenoble). Publication of numerous articles as well as several books "Transfert de technologie et développement" – (technology transfer and development...)

Rafael PAMPILLON – Spain

Doctor in Economic science. Professor of Applied Economics. Advisor to the Spanish Government for development co-operation issues.

Antonio José Boita PAULINO – Portugal

Engineer, charged with the international activities of the Group EDP – Electricidade of Portugal, Inc. Member of the Direction of OIKOS Cooperação e Desenvolvimento [NGO]. Coordinator of the Projects of the electric sector in Africa.

Janet RILEY – Great Britain

IACR (Institute for Arable Crop Research) – Rothamsted, London Acting head of IACR statistics department. Currently Project Co-ordinator for EU-INCO-DC project 'Unification of Indicator Quality for Integrated Multidisciplinary Systems', Member of the Scientific Council of CIRAD.

Gilles SAINT-MARTIN – France

Member of the cabinets of the French Ministry of research and French Ministry of National Education.

Pierre-Frédéric TENIERE-BUCHOT – France

High Commissioner of the United Nations Environment Programme. Governor of the World Council of water (Conseil Mondial de l'eau).

Heinz WOLFF – Great Britain

Scientist and TV presenter.