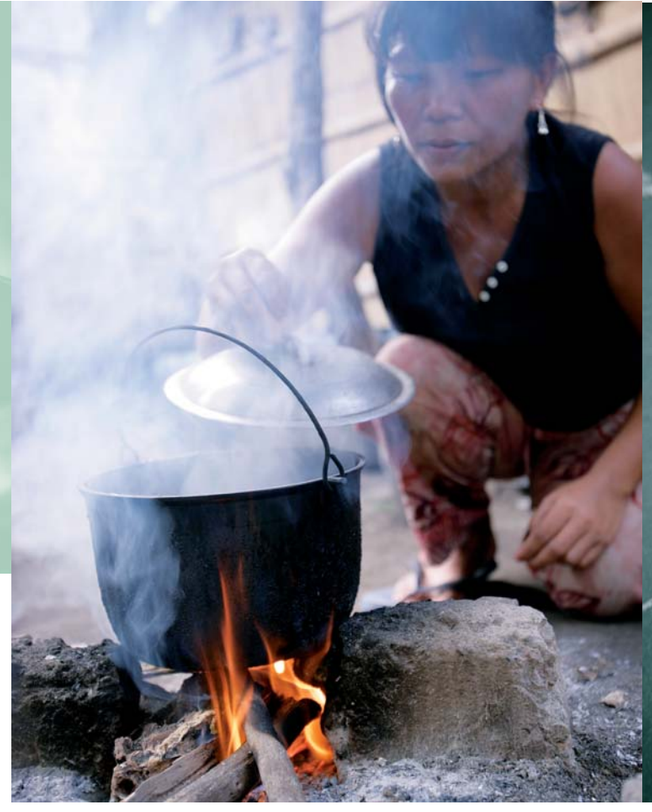
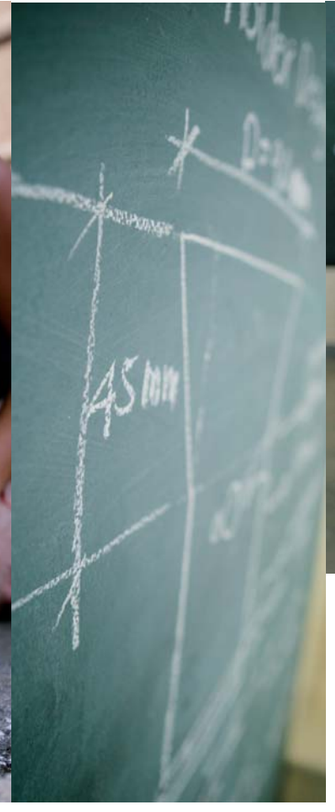
B/S/H/

Protos. The Plant Oil Stove.

BSH BOSCH UND SIEMENS HAUSGERÄTE GMBH





A plant oil stove for the Philippines

Protos. Cooking With Renewable Energy

The Philippines – a natural paradise for visitors. Looking through the airplane's window, one sees endless green forests, crystal clear water and sandy white beaches. The view, however, is misleading. The paradise is endangered. Sixty percent of the Philippine's land area was once covered by rain forest – today, it is less than 6 percent. One of the main causes of destruction, not only in the Philippines, but worldwide: the increasing demand for firewood.

Urgently needed: a new cooking technology for developing and emerging countries

Today, more than 2.5 billion people prepare their food on open fires using firewood or plant residues. Others cook with simple kerosene or gas stoves. The use of fossil fuels has increased globally to an alerting extent. This not only destroys the environment, emissions of the open fire are also hazardous to the health of the users. The World Health Organization (WHO) estimates that every year 1.6 million people die as a result of indoor air pollution caused by these fire places. In Indonesia, more than 30 percent of deaths in children aged one to four are caused by these emissions.

Protos is the name of the plant oil stove, now introduced by the Bosch and Siemens Home Appliances Group. For the first time, a stove was developed that is fueled by plant oils – even oil previously used for deep frying!
For more than a year, the stove has been field tested in more than 100 households on the Philippine island of Leyte. A team of German and Filipino scientists organized the field test, which was financed and conducted by BSH, co-financed by the German government's Public Private Partnership program and supported by experts from development aid agencies. BSH's CEO, Dr. Kurt-Ludwig Gutberlet: "With Protos, BSH demonstrates its core competence in cooking, which has developed over decades, as well as its corporate social and environmental responsibility. Economy and ecology do not necessarily contradict each other, but can supplement each other constructively. This BSH initiative is proof of it."

Success through teamwork

The already evident success of Protos can mainly be attributed to one fact: teamwork. Since 1997, the University of Hohenheim – Dr. Elmar Stumpf, today leading the Protos project at BSH – had developed initial prototypes with the financial support from member organizations of the Bellagio Forum for Sustainable Development. Under the direction of Gerd Strobel, Senior Vice President Product Area Cookers, and Dirk Hoffmann, Vice President International Sales, BSH took over the plant oil stove in 2003 and intensified the existing relationship with the Leyte State University. The university's president, Prof. Dr. Pacienca P. Milan, and the project leader, Prof. Dr. Roberto C. Guarte, are dedicated partners fully committed to BSH's initiative. What seems to be a very logical and easy product, in fact needed years of intensive research. Development partners include the German universities of Hohenheim, Stuttgart and Karlsruhe, as well as the University of the Armed Forces in Munich and the Technical University of Munich. Within BSH, developers from Munich, Traunreut and Lipsheim, France, were involved, and also new business models were set up. Apprentices in Bretten and Traunreut produced the prototypes.

From Leyte to the world

Protos' future is far from being uncertain. Some 100 households tested the stove – and are more than satisfied with the product. Early this year, the stove was offered for sale to the public in Leyte for the first time with great success. Obviously, sales figures are still moderate and it is too early to consider large-scale production. However, Protos has definitely left its early development stage and is ready to face the world.

Fumes and smoke when cooking? It doesn't have to be that way. Protos is the result of intensive research over many years.

Dr.-Ing. Elmar Stumpf
Project Leader at BSH

"Knowing about the concept of the plant oil stove for the first time, I was convinced: this technology could change life for many people in developing and emerging countries. However, it took years of intensive research for the stove's development. At BSH, I am responsible for the optimization of the technology. We know we still have improvements to make to the stove, and we are working on it diligently. Next to the technical development we also set up a sustainable system including the cultivation of oil plants, the production of the plant oil, as well as the set up of the marketing system. This was indeed an exceptional challenge. Together with our partners we set up a successful economic model that creates job opportunities for the local population. Important for us: the users are really enthusiastic about the new technology. They realize Protos eases the living conditions of their families. This is our impetus."

A joint effort for global challenges

Partnerships for Sustainable Development

Everyone talks about globalization these days. Most companies, however, have long recognized that globalization means more than developing new markets. Globalization also calls for corporations to assume social responsibility – for people and the environment: Corporate Social Responsibility (CSR). As a member of the UN Global Compact, the Bosch and Siemens Home Appliances Group has been assuming its global responsibility for many years. In October 2003, it joined the Bellagio Forum for Sustainable Development, an umbrella organization for several foundations and few select companies with a common goal: to foster sustainable development and to protect the environment. The BSH activities also find recognition from others. In 2002, BSH Chief Technology and Operating Officer, Dr. Robert Kugler, was named "Eco Manager of the Year," and, in 2006, Chairman and CEO, Dr. Kurt-Ludwig Gutberlet, received the international B.A.U.M. Special Award. In fact, one main consideration for bestowing the B.A.U.M. award was the development of Protos.

Relying on established structures

BSH alone would not have been able to realize the plant oil stove project. It needed the right partners, like the European Nature Heritage Fund (Euronatur), who evaluates the ecological aspects of the project and for years has a close relationship to the University of Hohenheim and Leyte State University. The project is supported by the Public Private Partnership Program of the German Ministry for Economic Cooperation and Development (BMZ) through the DEG – Deutsche Investitions- und Entwicklungsgesellschaft mbH (German association for investment and development), one of Europe's largest development agencies. Through the PPP program the German government fosters cooperation between private businesses and development aid explicitly desiring the long-term economic feasibility.

Technical data Protos

Fuel:
diverse plant oils, plant oil esters

Usage:
2 litres per week for a family of 4-5

CO_2-balance: neutral

Power range: 1.6-3.8 kW

Emissions:
ten times lower than with high quality kerosene stoves

No risk of explosions or uncontrolled burning

Cooking time reduced by 30-40 percent compared to firewood stoves

Long-term strategy and joint action

However, it takes time before one can take action – patience is required. First of all, it is important to understand the country and its people. This is where another partner came in Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) mbH – the German agency for technical cooperation – which is supporting sustainable development worldwide.
For many years, GTZ has been involved in several coastal and rain forest protection programs in the Philippines, as well as programs for the improvement of people's livelihood improvement programs; some of those in cooperation with the Leyte State University. All in all, BSH can rely on an established network that has been growing for years and that is key for the Protos project.

www.deginvest.de
DEG – Deutsche Investitions- und Entwicklungsgesellschaft, Cologne

www.euronatur.org
European Nature Heritage Fund, Ludwigsburg

www.gtz.de
Deutsche Gesellschaft für Technische Zusammenarbeit, Eschborn/Frankfurt

www.lsu-visca.edu.ph
Leyte State University, Baybay, Leyte, Philippines

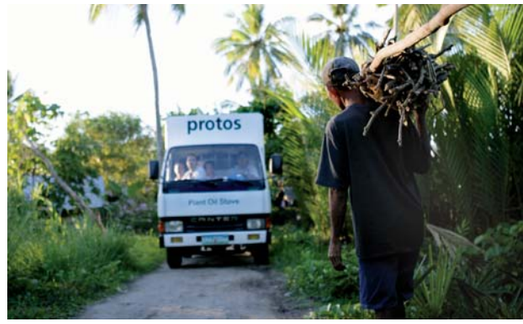
Sales and marketing

The marketing of Protos began in spring 2006. A few small outlet stores were set up, dealers were trained and a "Protos Road Show Truck" was built. With the latter one Protos can be demonstrated across the country sites – for the time being, a modest start. However, visiting 22-year old Ray Avellana at his small outlet store in the city of Baybay, the young entrepreneur proudly reports that he sold 29 stoves in just two weeks. For him an unexpectedly great success. Dirk Hoffmann, Vice President International Sales at BSH: "To achieve sustainability, in my opinion, users and local businesses need to have a significant economic benefit – either additional jobs or simply less costs. Only then people can be convinced of ecological and health benefits."

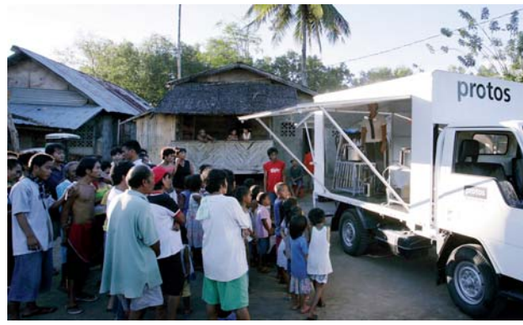
Rolf Gerber, DEG

First Vice President
Special Programs

"When I went to Leyte in the spring of 2006 for the official presentation, I saw with my own eyes how far the initiative had come. I was impressed by the efficiency even on a smaller scale – the small restaurants that were able to increase their sales because of Protos, the farmers of the cooperative who successfully market their oil, and the authorized dealers who took great care in decorating their small shop floors and were very proud of their success. They all know that Protos gives them the opportunity to secure a better future for themselves through their own entrepreneurial activities and gives them a chance to develop their success even further. I can very well imagine that this stove and the sustainability project attached to it would be an equally great success in other developing and emerging countries. We will definitely try to continue our support in that direction."

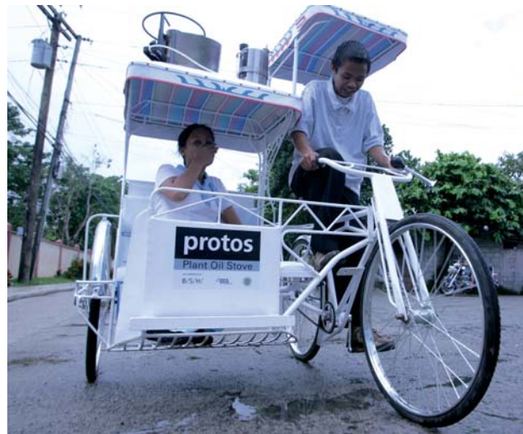


The future is on its way. With the "Protos Info-Mobile," the stove can be demonstrated and sold even in remote villages.



A Filipino cooking demonstration – completely without fumes and smoke.

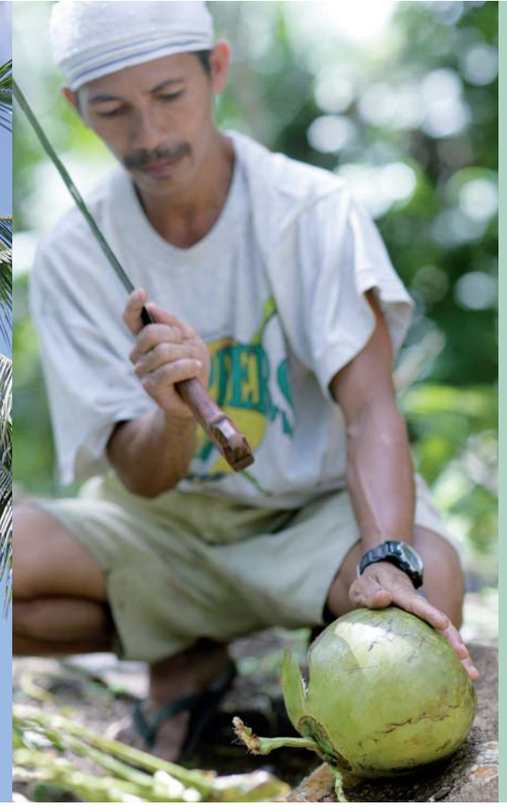
Sometimes the advertising signage is still bigger than the shop floors. But that may change soon, because Protos is set for success.



Every day, thousands of tricycle taxis are looking for passengers in the island city of Baybay. Two of these taxis now advertise Protos.

Plant oil, a farmers cooperative and new jobs.

Renewable Resources Protect the Environment



Prof. Dr.
Roberto C. Guarte
Dean of the Leyte State University

“In my opinion, the Protos project is valuable because it is not just about marketing a new product. When I see the enthusiasm and energy our employees and our students bring to the project, then I know that we are on the right track. Obviously, a lot of know-how comes to us from other countries. We also contribute – our expertise in agriculture and our market knowledge that tells us what kind of products are marketable in this country. We know what works and what doesn’t. A project like this can only succeed when it is based on mutuality and understanding. Protos is proof of that. It is important to us that the users want to have our product Protos. We are happy to support BSH in introducing the stove and the plant oil production system in other countries as well.”

The old lady seemed very content. “You know,” she says in almost perfect English, “My sons finally found work that pays reasonably. And my grandsons are already looking forward to working in the cooperative when they grow up.” Does she mind being asked about her age? She doesn’t know her exact age, she says. But she did bring a pen to document the experience for her grandchildren. Like her, many people came as guests to Ciabu that day to see what kind of work the cooperative was doing.

The farmers and their oil

Ciabu is a small village, about a one-hour drive from the Leyte State University. Since early 2006, the Ciabu Primary Multipurpose Cooperative has run its own oil production center for their 400 member families. Together they harvest coconuts and process the oil, while the remaining press cake is an excellent animal fodder. Initial financing for the building and the production line was provided by the Protos initiative from BSH and DEG.

From coconut to fuel

To process the oil from the nut, one first needs to remove the husk. Afterwards, farmers split the nut and dry the coconut meat in a special oven fueled by the husk which was just removed. The resulting dried coconut meat, which is called copra, is then cut and pressed using simple tools. During an eight-hour shift, farmers process approximately 130 liters of oil per day. For one liter of fuel, the cooperative charges the equivalent of 42 euro cents. In comparison, one liter of kerosene costs 53 euro cents and is therefore much more expensive.

More money for the nut

For the old woman, who doesn’t know her exact age, but is good at doing the math, the result is clear: she spends less money on fuel and in return receives more money for her nuts. After all, the price for crude coconut oil is no longer stable. However, Protos offers more sales potential. By selling the oil and the press cake as fodder, a 20 percent increase in revenue is achieved.

Not all oils are the same? In this case, they are.

One quarter of the Philippines’ farmland is used for growing coconut plants. The country is the largest producer of coconut oil worldwide. Approximately 120,000 farmers in Leyte live from coconut oil, which is seven percent of the island’s total population. In addition, there are farmers that grow other oil plants, such as the Jatropha Curcas (physic nut), a very common oil plant in the Philippines; however, it cannot be used for food. Protos can run on diverse plant oils oils, which gives farmers the opportunity to increase their income by growing a mix of coconut and Jatropha plants. Therefore, Protos also contributes to a mixed forest, which is always favorable, and is a perfect example of business and environmental protection working hand in hand.

Harvesting, drying, pressing, cooking – a sustainable production process: a coconut turns into fuel for Protos.

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Protos. The Plant Oil Stove.
An initiative of the Bosch and Siemens Home Appliances Group.