



# CONTAINED ENERGY NEWSLETTER

RENEWABLE ENERGY & SUSTAINABLE SOLUTIONS

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## INTRODUCING CONTAINED ENERGY

Contained Energy (CE): leaders in renewable and sustainable energy solutions. CE supplies Indonesia, ASEAN and beyond with custom-designed premier energy systems, from design and product selection, to installation and maintenance.

In this first issue of our Newsletter, we highlight some of the development projects we have been, and are, involved in with NGO's and CSR departments of large companies.

## PROJECT AT A GLANCE

### LOCATION

Three villages in West Sulawesi island near Pasang Kayu: Batugoe, Tampoare, Lariang

### DESCRIPTION

Biogas plants in two villages & four solar dryers in one village

### SYSTEM DETAILS

2 x biogas plants, 4 x solar dryers

### COMPLETED

March 2009

## Sulawesi - Biogas and Solar drying

### SUPPORTING VILLAGES IN SULAWESI IN COOPERATION WITH MARATHON OIL CSR DEPARTMENT

In early 2009, Contained Energy Indonesia undertook a project in cooperation with the Corporate Social Responsibility (CSR) department of Marathon Oil Corporation to install two biogas digesters and four solar dryers in western Sulawesi. Such CSR work, with profit based companies as well as Non-Governmental Organizations (NGO's), is a major component of CE's business.

The Marathon CSR group contacted 12 nearby villages in the course of setting up their workers' base camp in western Sulawesi to determine how the local communities could best be supported by the company's commitment to CSR. It was determined that villages would benefit most from biogas and solar dryers. CE was then called in to set up biogas plants in two villages and four solar dryers in another.

### BENEFITS FOR THE LOCAL COMMUNITIES

The biogas plants set up by CE in two villages will enable villagers to save money previously spent on LPG, an especially expensive commodity for low-income rural households. Villagers will also benefit from using the simpler biogas cooking stoves by removing the problems frequently experienced with LPG devices breaking down and incurring maintenance costs. The biogas generated is normally used for cooking, lighting and to power small appliances.

In the parallel project, four solar dryers allow residents of the other village to continue high production of dried fish – one of their main sources of income – during the wet season. Prior to the installation, their income and output was significantly reduced each wet season when using traditional drying methods. The solar dryers developed by CE help them keep profits high throughout the year.



## DID YOU KNOW?

If it could be properly harnessed, enough solar energy falls on the earth in just one hour to meet world energy demands for a whole year.

## Nusa Penida Drinks From The Ocean

### SOLAR WATER DESALINATION SUPPLIES CLEAN DRINKING WATER TO NUSA PENIDA VILLAGES

A few kilometres off the touristy coast of southern Bali lies a small fishing island, Nusa Penida – home to postcard perfect unspoiled beaches, turquoise blue bays, coconut tree lined hills... but limited access to the most basic necessity of clean drinking water.

That is, until the end of 2007, because that's when Contained Energy was contracted by the Indonesian government to install two solar powered water desalination systems on the island. These systems are able to transform unclean and saline water into potable water through the process of reverse osmosis.

The system, which produces up to 2,000 litres of clean water for the entire island every day, consists of solar PV panels and solar trackers that follow the sun's rays, using their power to pump water from a well and then clean it through a high tech reverse osmosis machine. The system includes a battery system charged each day for operation outside sunlight hours.

Thanks to the CE solar water desalination system, these villages on Nusa Penida can now supply the clean drinking water essential for daily living, proper health and sanitation to their schools, medical clinics and homes.

## Heat & Ice

### INTRODUCING THE SOLAR ICE MAKER

Producing ice using the heat of the sun? How can that be? Surely it's a direct contradiction in terms?

Large Ice producing factories use an interaction between the refrigerant ammonia and plain old water to make ice. Contained Energy Indonesia has taken this process and adapted it to use the power of the sun.



CE is currently developing a device still using the cooling feature of ammonia, but minus the devouring of great amounts of grid electricity. Instead CE's device will use heat, provided free and clean by the sun, to trigger the cooling process. A technology that is environmentally friendly but still able to produce up to 200kg of ice each day.

Eco-friendly connotations aside, CE's solar ice maker can also be set up in off-grid regions and rural areas where there are insufficient power supplies, providing ice for cooling and freezing in areas that, thus far, could not enjoy the benefits of frozen water. Access to ice in these areas also provides new economic opportunities for small-scale rural businesses in the fields of fishery, butchery and the agricultural sector, with solar made ice helping to improve the quality and durability of products. It can also supply ice to remote hospitals or clinics for storing medicine and vaccinations.



*The CE Solar Ice Maker can be visited at the Contained Energy Research Facility (CERF) located at the R.O.L.E. Foundation Eco Learning Center in Nusa Dua, Bali. Other CE technologies – like a photovoltaic show unit, biogas plant and solar drying devices – are also available for viewing at CERF. For more information, please contact us.*

## Lighting Up Micronesia

### SOLAR POWER GIVES LIGHT TO COMMUNITIES ON REMOTE ISLANDS

In a massive EU funded project to provide power to 12 remote islands in Micronesia, Contained Energy has just completed installation management of 18 solar PV energy systems. The systems, over 100kW in total and comprised of photovoltaic (PV) solar panels that capture the sun's energy and convert it into usable 220V power, are installed in medical clinics and schools scattered throughout the archipelago. Two islands were provided with a stand-alone 'mini' power grid.

Until recently these communities had no access to grid power and no hope of ever receiving such. Now, thanks to CE's energy solutions, they have their own solar power system, which provides medical clinics electrical power essential for proper hygiene and schools with the electricity needed for children to attend schools with proper lighting when daylight is limited.

CE professionals involved local islanders in installation and conducted extensive training on systems for basic maintenance and support, making this four-month project very much a community effort.



Thanks to the EU, CE and solar energy, island life has changed for villagers in Micronesia, with greater hopes for a better education and improved medical care. The future, quite literally, does indeed look brighter.



### DID YOU KNOW?

The sun shining down on Bali is also actually showering it with up to 7kWh/m<sup>2</sup> of solar energy power each day.

## Pulau Sumba Clinics: Healthy Prognosis

### SOLAR POWER FOR RURAL CLINICS ON PULAU SUMBA

Working on an archipelago like Indonesia often requires extra flexibility to reach communities on the most remote islands. Contained Energy Indonesia knows the truth to this thanks to their involvement in a partner project with the Indonesian government in the province of Nusa Tenggara Timur on the island of Pulau Sumba.

### PROJECT AT A GLANCE

#### LOCATION

Pulau Sumba, Nusa Tenggara Timur

#### DESCRIPTION

Solar PV systems to supply electricity to five medical clinics

#### SYSTEM DETAILS

6 x 130 Kyocera solar panels, 2200 Watt inverter/chargers, 9.6kWh battery backup per project site

#### COMPLETED

March 2009

Even, or perhaps especially, isolated islands such as Sumba require medical clinics. And for medical clinics to run efficiently, they require electricity, no matter how isolated they are or how difficult to get to. Which is why CE Indonesia is committed to helping five small rural clinics in the Nusa Tenggara Timur province by supplying them with solar electricity.

CE Indonesia has set up the solar system for one clinic and is conducting training for locals to enable them to assemble and maintain the remaining four clinics by themselves. This means the project is, again, a community effort, with locals becoming truly invested in their clinics.

#### BENEFITS

The energy obtained by the solar panels and stored in the backup batteries will provide sufficient energy for vaccine refrigeration, lighting and the running of some electrical devices. Furthermore, until now the clinics have depended on diesel-fuel generators, which are expensive and unreliable. The CE solar systems will provide a constant power supply and allow clinics to get rid of the gen-sets, which means they will also no longer have to worry about a consistent supply of fuel and the enormous logistical effort that requires to their remote area.

## The Who's Who

### INTRODUCING THE PEOPLE BEHIND CE INDONESIA. MEET PAK HATTA

Who are the people behind Contained Energy Indonesia? Our predominantly Indonesian team hails from all over the nation, including staff members from the islands of Sumatra, Java and Bali.

In this issue of the CE Newsletter, we'd like to introduce you to Pak Hatta.

Born and raised in north Sumatra, Pak Hatta (*4th from the left in photo below*) is a 25-year-old civil engineer who joined CE in March 2008. After finishing his studies in Padang, West Sumatra, he gained a lot of experience in the field as a team member of a NGO in the Banda Aceh area. During this time he developed a special interest in renewable energy technology and soon after found his way to CE.

Since then, Pak Hatta continues to be integrally involved in numerous CE projects in the North Sumatra region. From solar cacao drying systems, to solar home systems and street lighting, to solar pumping ventures, Pak Hatta is the go-to-guy, the man in charge. He is also the face in the field for client contact, mostly NGOs committed to developing Sumatra's north, which has been struggling since it was hit by the tsunami. None, it must be said however, as committed as Pak Hatta himself.



## A Bigger Role for R.O.L.E

### R.O.L.E ECO LEARNING CENTER OPENS IN NUSA DUA

The R.O.L.E Foundation's Eco Center in Nusa Dua, Bali, opened its eco-friendly bamboo gates in April in its continued quest to help bridge the gap between economic prosperity and the environment.



The training center, aimed at creating eco-friendly jobs and businesses, includes facilities for organic farming, snail and worm cultivation, composting, the Contained Energy Research Facility (CERF) with CE's biogas reactor, Ice Maker and much more.

The 15,500m<sup>2</sup> facility is located on the rolling green hills high on the bukit of Bali with panoramic views of the Indian Ocean. It's less about the views and more about the vision, however: founder Michael O'Leary has ambitious plans for R.O.L.E, including a total of 19 training stations at the eco center; a Women's Vocational Skills Education school, marine revival, an ocean farming center and job and business development center. Programmes, designed to assist the poor and underprivileged, are free of charge to those selected for the training.

For R.O.L.E this is just the beginning in a movement to eradicate poverty and restore the environment.

For more information visit [www.rolefoundation.org](http://www.rolefoundation.org).

### DID YOU KNOW?

Three tons of biomass can replace one ton of harmful diesel fuel.

### Future Perfect

#### RENEWABLE ENERGY IS THE FUTURE OF ENERGY PRODUCTION

It was not that long ago that the price of oil rose to a shocking US\$140/barrel. And it will go there again. It is no secret that oil price trends will keep rising steadily and that the world needs to move away from oil dependence and the use of limited fossil fuels if we want to bring the benefits of energy to more people, especially in remote and developing areas. The solution? Simple: we need to utilize the abundant renewable resources available immediately around us to meet those new energy demands.

With this in mind, Contained Energy (CE) continues to develop solutions and energy systems, using proven technology and quality equipment, that are not only environmentally friendly but can provide years of cost-savings and are suitable for implementation in remote and developing areas.

Market leaders in providing custom-designed renewable energy solutions in Indonesia, ASEAN and beyond, CE professionals work closely with all customers to evaluate their energy needs and customize systems that work for each project. Whether it is a simple residential solar powered pool pump or an integrated solar, hydro and wind energy system to power an entire community needed, CE has the energy solution.

#### DID YOU KNOW?

Solar heating of 15m<sup>3</sup> of hot water per day reduces CO<sub>2</sub> emissions by as much as 130 tons per year.



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