

PV

Personal View

'Let there be Light'

I spotted him from my bedroom window one morning. He was striding through the courtyard, with a couple of monks hurrying to keep up with him. They disappeared into the labyrinth that is Thubten Choling monastery, about 10 000 feet up in the Himalayas, in Solu Khumbu, one of the most beautiful regions of beautiful Nepal.

He was a tall, blond Westener and I immediately wanted to know why he was there. I had arrived a couple of days earlier to research a biography but was not doing very well because the person who spoke English, who I had been told was at the monastery, was house-sitting for a friend in Kathmandu at the time, so I had no translator. I chased after the newcomer and found him with the monks, contemplating some car batteries. They were chatting in Nepalese and I realised that my luck had changed.

He turned out to be Dennis Ramsey, who divides his time between Eugene, Oregon and Kathmandu. It also turned out that he was at Thubten Choling to install a photovoltaic (PV) lighting system. This was nothing like what one might expect to encounter in a wild, inaccessible corner of the Himalayas, but it was extremely interesting. Over the following 10 days I learned about photovoltaics and Dennis learned about Zina, the subject of my biography. I helped him and he translated for me.

Dennis started his PV work in Nepal after striking up a friendship with a Tibetan lama called Topgay, who built Tumbuk monastery 'from the bare earth, on zero resources'. Dennis financed his first PV installation at Tumbuk himself and then moved on to put another one in at Phungboche monastery with money donated by a Swiss couple, Eberhard Berg and Vereni Feldner, who also helped with the work. At Tumbuk and Phungboche it was their first experience of electric light and when the bulbs shone forth, it transformed the lives of the people there.

'We had a catastrophe at Tumbuk', said Dennis, 'because a Nepali guy brought us distilled water instead of battery acid, so I had to go all the way

back to Kathmandu to sort this out. With one fresh 200-Ah battery left and with real acid this time, when I returned the system worked so well and the light was so bright, that the 20 people who were there moved towards it in amazement. I was so relieved, I cried'.

The installation at Thubten Choling supplements a ramshackle hydroelectric generator.

'Photovoltaics is much better suited to Himalyan conditions', Dennis explained, 'because it has no moving parts. The hydro systems break down all the time—the one at Thubten Choling was badly installed and is connected to the wrong sort of wiring. They can only run it for short periods, so it is not at all efficient'. The head of Thubten Choling, Trulshik Rinpoche, had been given two solar panels and some car batteries. He financed the rest of the equipment and Dennis did the installation free of charge.

The systems that Dennis used in Nepal were designed and supplied by Greg Holder of Alternate Means in Eugene, at 10% above cost. The Nepalese authorities waived import duties on them and Everest Air transported them from Kathmandu at reduced rates. As a result of this generosity, three monasteries in the Solu Khumbu region now have reliable PV lighting, either free or at a fraction of its commercial value.

I held flashlights, pulled wires, made tea and ran errands for Dennis as the PV work progressed. First the four 100-Ah car batteries were wired and fitted snugly into a box made by the monastery carpenter to Dennis' specification. Then the wiring from this was run through the floor to a corridor below—with extra care to make everything damp and rat-proof. 'One PV system blew up in Nepal because rodents gnawed through the wiring', said Dennis, patiently answering one of my many queries, 'so I'm not taking any chances'.

Then we moved downstairs to install the controls. Dennis had kitted out a very neat nest for the high-tech components to live in. It is a wooden box bought off the shelf, and modified with air and wire

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holes. An oblong panel had been cut from the front and covered with muslin, to let air in and keep dust out. He screwed this to the corridor wall, outside Trulshik Rinpoche's quarters, in an area of the monastery not frequented by casual visitors. The front of the box opens upwards for easy access. Into this went an SCIASC 12-8 charge controller and a Statpower 250-W, 110-V inverter, plus other bits and pieces.

The next stage of the proceedings took us out of a top floor window and onto the roof, where Dennis and his apprentice, a young monk called Norabge, perched precariously on a slippery wooden slope to install the solar panels. I got out of the window and along a parapet, but refused to take my chances on the steep bits. I did, however, keep up an encouraging flow of chatter as they worked. Getting the wiring through the roof was a struggle and both of them were filthy by the time it was done.

There is nothing even vaguely resembling washing facilities for visitors at Thubten Choling. I made do each day with one thermos of warm water and a small bowl. That afternoon I tried to convince Rinpoche's second-in-command that Dennis needed a shower. Sign language did not get the message across. Dennis would not ask for himself, so he stayed dirty.

There was a magic moment when all the components of the PV system were assembled and I held a fluorescent tube lovingly as the final adjustments were made. There was Dennis on screwdriver, Norabge on flashlight and me with the tube. We were encircled by monks, peering over our shoulders. It had a ritualistic quality and as the tube flickered alight there were sighs of joy from the monks and cheers from me. Dennis was Mr Super-Cool and refused to get excited. He had done it all before, but for the rest of us it was a small miracle.

Over the next 2 days we ran wiring through the main monastery building and connected up five

Philips low-watt fluorescent lights. As each one went on stream and the bright light illuminated corners that had hitherto always been dark, the smiles on the faces of the monks and nuns became ever broader. There was an extreme contrast between these lights and the weak orange glow from the ones powered by the hydro.

There is a special joy about being around Tibetans even under ordinary circumstances, but when something like this happens the atmosphere becomes incandescent. It was the happiest 10 days of my 6 months of travelling around the world. The monastery cooks excelled themselves to give us a good meal on our last night and Dennis was delighted when Norabge finally convinced us that he knew how the system operates and how to keep it running smoothly. Battery maintenance, of course, is the all-important factor.

Dennis is now working with the Global Resources Institute in Eugene, to extend his PV programme to other areas in Nepal. Their aim is to get funding to improve rural economic opportunities and the living conditions of the local people, most of whom are desperately poor. Nearly all of the mountainous regions of Nepal have no electric power and, because of the geographical constraints, will never be connected to grid electricity. Applications for photovoltaics in Nepal include medical centres, water pumping and purification, agricultural processes, battery charging, food processing and radio communications. The Global Resources Institute will work through Nepali organisations to find three villages that would benefit most from solar electrification. Their budget projection for this initial programme is US \$215 000 over 2 years. Anyone who would like to help should contact:

Dennis Ramsey, c/o Global Resources Institute, 1210 Pearl St., PO Box 11752, Eugene, Oregon 97440, USA.

Mary Finnigan

'Personal View' is open to all members of the PV Community. The opinions expressed are not necessarily those of the Editors or Publishers.

The Managing Editor will be pleased to receive further 'Personal Views', as well as 'Letters to the Editor' discussing the issues raised.