

## Taking Technology to the Village

**UC Santa Barbara's chapter of Engineers Without Borders gets back to basics far from home.**

Will Martinez moves in two different worlds. One is in Santa Barbara, where this UCSB-trained engineer works with a startup company on the development of micro-machines. The other is in the Peruvian village of Araypallpa, where Martinez's father was born. Here the work is decidedly lower-tech — to produce electricity and clean water.

This mission and many others are being undertaken under the banner of Engineers Without Borders (EWB), a fast-growing network of students and professionals who volunteer in the developing world. "EWB projects are very different from those in grad school, says Martinez, who earned his master's in materials science at UCSB in 2005 and was founding president of the university's EWB chapter. "You have to add the human factor, with a language barrier and a cultural barrier in between," he says. But the effort pays off in benefits for both sides: A better life for the villagers and, for the engineers, the sort of practical knowledge that they would never have acquired in the classroom or lab.

UCSB's EWB chapter has been working in Araypallpa, a settlement of about 300 in the Andean highlands, for the past three years. It started in July 2004 when six students installed solar panels to provide lighting for two classrooms and performed water and sanitation assessments. The next summer, the chapter set up a pilot slow sand filtration system for the village's water supply. Members returned to the village this year to make sure the system was working and to start a community library with solar-powered lighting. When funding permits, they will return to expand the slow sand filtration system so that it can serve the whole village.

The chapter has also done work in Thailand, where five of its members last year installed a septic system for a rural elementary school dormitory being built by another EWB chapter. Recently it designed a press that villagers in the African nation of Mali can use to extract oil from the jatropha nut for biodiesel fuel. This year, mechanical engineering seniors will develop a system for processing the oil into fuel.

All these projects share a common theme. They are designed not just to work when trained engineers are around, but to continue working long after the engineers have gone home. "What we're trying to do is build their capacity," says Vared Doctori, a doctoral student in environmental science who manages the Peru project. "We don't want them to be dependent on us." EWB focus on projects that can be operated and maintained by the local community without having to rely on imported spare parts or outside expertise. Also, she says, starting small has enabled EWB not just to hold down costs but also to train the villagers and test their ability to keep the system functional in the long term: "We only did a pilot at Araypallpa and made it very clear to the community that if you don't take care of it, we won't take care of it. Nobody will do it for you."

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