BETA International's Nonprofit Mission

1 Introduction

The World Health Organization has identified target countries where up to 80% of hospital equipment is either broken or uncalibrated, including Tanzania and Haiti. Often technical colleges in these countries lack resources for Biomedical Technician training, and few can offer practical engineering mentorship. BETA's mission is to provide modern laboratory test equipment, practice medical devices for calibration and repair, and engineering mentor volunteers drawn from active/retired engineering community, and college engineering students.

Dr. Masambu from Tanzanian Ministry of Health is shown biomedical training devices by BETA CEO Dan Schuster, while ATC Rector, Dr. Masika (R) and, EE Dept. Head, Eng. Melkior (L) look on.

Opportunities are provided for "voluntourism" (combining short-term volunteer commitment with tourism), which has been more common among medical professionals than engineers. BME/CBET background is ideal, but most EE/ME engineers or technicians have invaluable practical troubleshooting skills which are often lacking in academic environments, and can't be taught well from a textbook.

2 History, Formation, Accomplishments

BETA evolved from a 2007 Kilimanjaro climb by founder Dan Schuster, who was alerted to ubiquitous broken equipment by his RN daughter, doing "voluntourism" at a Moshi hospital. The need for technologist voluntourism was substantiated by WHO reports on Tanzania's crisis in medical device maintenance, which led to an alliance with Arusha Technical College at the beginning of 2010. BETA facilitated upgrades to digital test equipment and fully-stocked prototyping laboratory, and ATC received Tanzania's NACTE agency approval for a 3-year "Electrical and Biomedical Engineering" diploma in 2013, with first graduates slated to complete their hospital internships in July, 2014. Arusha is well-situated for voluntourism, being at the heart of the Northern safari circuit as well as a launch point for climbing Kilimanjaro and Meru.

Haitian technicians get experience repairing Operating Room medical equipment after French/English Powerpoint lectures by BETA guest instructor for Rotary-sponsored BMET training in Pignon.

A year after the devastating 2010 Haitian earthquake, Schuster was recruited by George Balagtas to provide periodic volunteer Biomedical Engineering services to Hospital Bernard Mevs in Port-au-Prince, through Project Medishare. The BME need in Haiti was even greater, but training opportunities were more fragmented since most colleges had been destroyed. BETA Intl was incorporated in 2012 to address Tanzania and Haiti as initial targets for volunteer-assisted Biomedical Technology education, with 7 Board members including Balagtas and other engineers with a century of cumulative biomedical and imaging expertise, along with two FNP clinicians.

The first "Electrical and Biomedical Engineering" graduates of Arusha Technical College pose with BETA's first volunteer summer instructor (center top), Hobey Tam of Clemson University.

3 "Voluntourism" Opportunities

Technology professionals have as much interest in volunteer service as medical professionals, but traditionally have had fewer opportunities while on exotic adventure vacations. Notable exceptions include Engineers Without Borders and Engineering World Health (with which we have partnered to train ATC faculty). BETA is unique in that we seek to encourage short-term mentorship opportunities between engineers/students here and abroad. We believe resident technologists can bring about positive change in underserved countries, particularly in the quality of life afforded by advanced health care. Tourism income is also enhanced when well-equipped hospitals are part of a country's infrastructure. Contact BETA to see whether we might have the best volunteer fit for your technology skills!

4. Workshops and Laboratories Need Equipment

Modern equipment is key to developing practical expertise in medical equipment repair at Arusha Technical College and elsewhere. Volunteers provide a low-cost route for donated biomedical devices to reach college laboratories, since shipping costs are often astronomical. Our goal is to equip college labs with used equipment to supplement the intern opportunities afforded by local hospitals. **Please consider donating functional medical equipment to BETA! Contact us for suitability.**

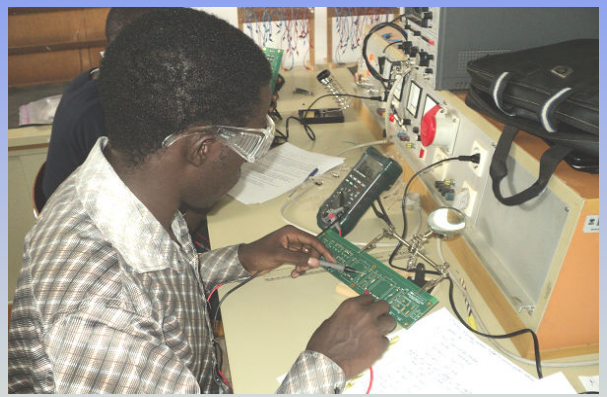
5. Short Courses and Sustainability

The work just begins when we graduate a biomedical technologist. No field changes more rapidly, and staying current is challenging for both medical and technology staff. Technologist roles include educating medical staff on new equipment, and staying current through short courses.

BETA Intl's Executive Director, Mr. Daniel Schuster (center) demonstrates to Tanzanian Deputy Minister for Education/Vocational Training, Hon. Philipo Mulugo (R), how automatic blood pressure device works. ATC Rector, Dr. Richard Masika, looks on at left. These devices are "sabotaged" for student repair practice.

6. How You Can Help

While volunteers and donated equipment are vital, small donations keep us in operation as a public benefit non-profit. You won't know the thrill or anguish of repairing an infant incubator when a preemie's life is at stake, but you will enable the self-sufficiency of local technicians and engineers to provide those technological miracles that we take for granted. **Please consider how your small monetary "seed" can grow as the technologist you train expands his or her impact on patient care.**



Biomed student tests and measures circuit parameters after soldering components on PCB during practical exercises.

EBE students observe ECG heart rhythm while learning biometric measurement science. ECG machines donated by OHSU are expanding ATC equipment resources.

BIOMEDICAL ENGINEERING TECHNOLOGY AID INTERNATIONAL

BETA International *(Nonprofit 501c3)*

"Resourceful Global Health Technology"

Promotes self-reliance in medical equipment repair, seeks volunteer mentors in Tanzania, Haiti, and functional medical device donations.

Tanzanian President Jakaya Kikwete listens to Arusha Technical College (ATC) Biomedical student explain her microprocessor project: a self-designed IV-infusion syringe pump. BETA equipped and developed the 50-student "EE and Biomed" program at ATC, which graduates its first 13 hospital repair techs in Jan. 2015.

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