



IC 1D5.3 - CIR Casting System for TT Sockets in Low-income Countries

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This paper presents a new casting system that uses sand for fabricating transtibial sockets. The principle, known as "dilatancy", is similar to that used in vacuum food packaging of coffee beans. Using a standard vacuum pump, a sand container, a large plastic bag and fine sand, one can make a precise impression of the patient's residual limb in a few minutes. The negative mold can be used as a test socket and then converted into a positive sand model for further modification and vacuum forming. Once the socket is made and cut off, the sand is easily drained.

The system was refined over a period of three years based on the information from: (a) repetitive trials with plaster models;

(b) clinical trials on nine volunteer subjects; (c) suggestions made by an evaluation team of nine U.S. trained prosthetists; and (d) field-testing in the Central America Region. Similar to the CAD-CAM technology, the CIR Casting System should be considered a "TOOL". It will not replace the need for a skillful prosthetic practitioner nor reduce the importance of time-tested biomechanical principles in prosthetics. The low cost of the set up and the simple maintenance of the equipment make the CIR Casting System a promising appropriate technology for prosthetics service in many parts of the world.