

Myoelectric Arm

Brief Description

Myoelectric arm is an artificial arm meant to provide rehabilitation to arm amputees at affordable cost. It looks and works like a natural arm.

When a healthy person opens or closes his hand, an electric signal is generated by arm muscles due to their contraction and relaxation. Similar is the case with an amputee. When he does the action of opening or closing his non-existent hand, the muscles of his residual stump generate an electric potential. The muscles generating maximum signal are identified and a set of electrodes pick up this signal. After electronic processing, a motor is driven to close or open the hand.



The arm consists of two parts - mechanical assembly and electronic circuitry. Mechanical part comprises of gripping fingers, palm, wrist and lower portion of upper limb. Electronics involves sensor electrodes, circuitry to process the myoelectric signal and a dc motor for opening and closing the hand. A body colored glove provides the cosmetic appeal to the entire setup.

Specifications

Operating Voltage	: 7.2 V
Current Consumption	: 250 mA at no grip 750 mA at 2 Kg load
Opening Width	: 75-100 mm
Max. weight to be grasped	: 2 Kg
Average Speed	: 3-4 cm/sec (approx)
Weight of arm	: 1.2 - 1.7 kg (max)
Operation	: By EMG signal

Features

- Microcontroller based operation
- Intelligent Prosthesis with variable hand speed setting according to user's preference
- Variable grip force on the object depending on its weight

Uniqueness

- Light weight, simple in manufacturing and durable
- Low manufacturing cost

Applications

Prosthesis for amputees of upper limb

Possible users

- Armed Forces
- Civilians
- Local Industry.