HackFrost NL
2.0

HUMAN CHARGERS

Amro Badawi
Electrical

Anna Behm
Computer

Omar Faruk
Mechanical

ECM
Survivors

The Problem

1.6 Billion

People live without electricity

7%

Of South Sudan's population have access to electricity

1.5 Million

People die each year from air pollution

89%

Of global CO2 emissions come from the fossil fuels industry

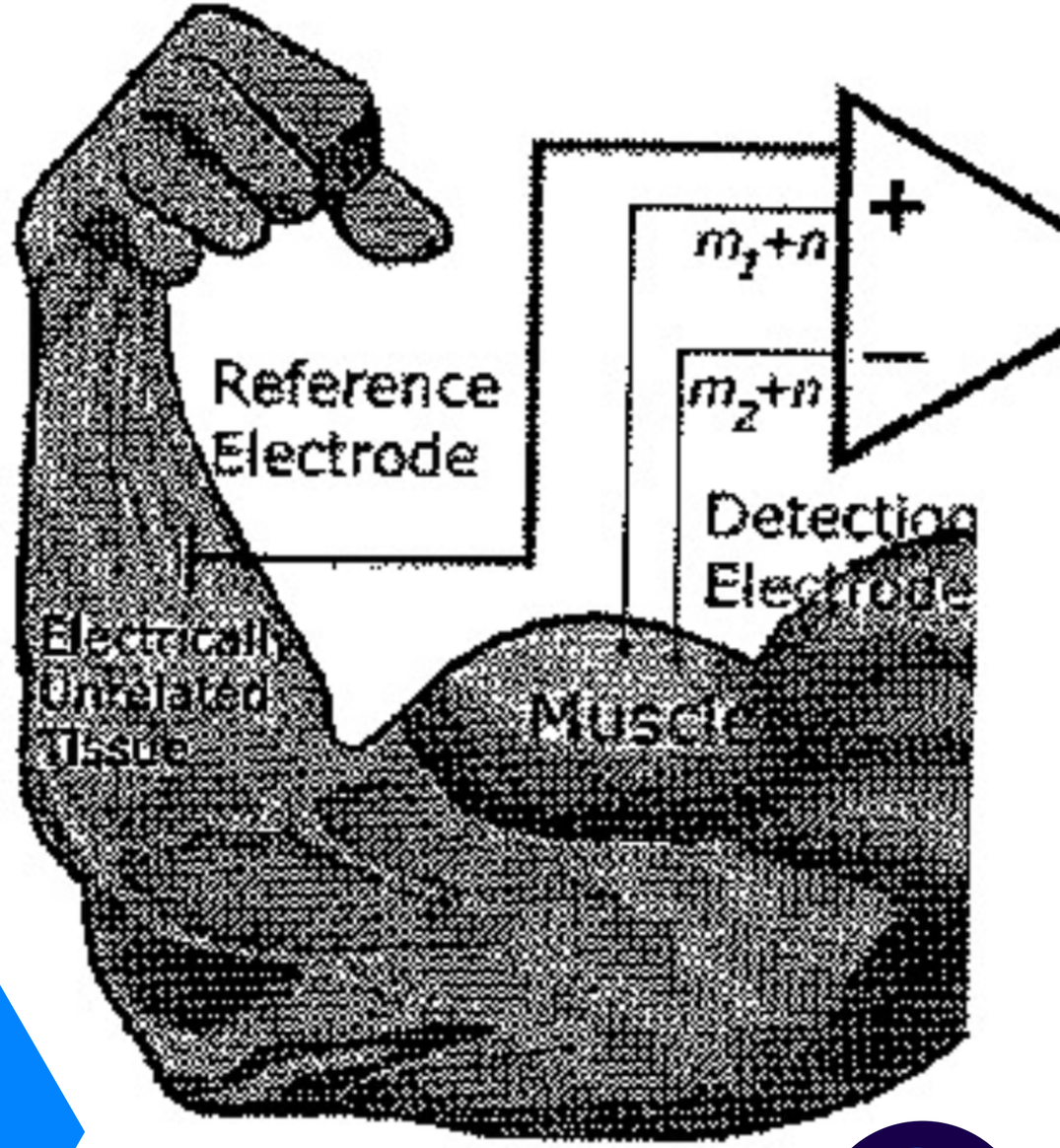
Through the muscle power of the human body, Human Chargers offers innovative and affordable clothing that harnesses renewable energy with each move that you make

With the usage of our newfound eco-friendly energy source, electromyography, Human Chargers will allow humans to progress into a new realm of sustainable energy sources

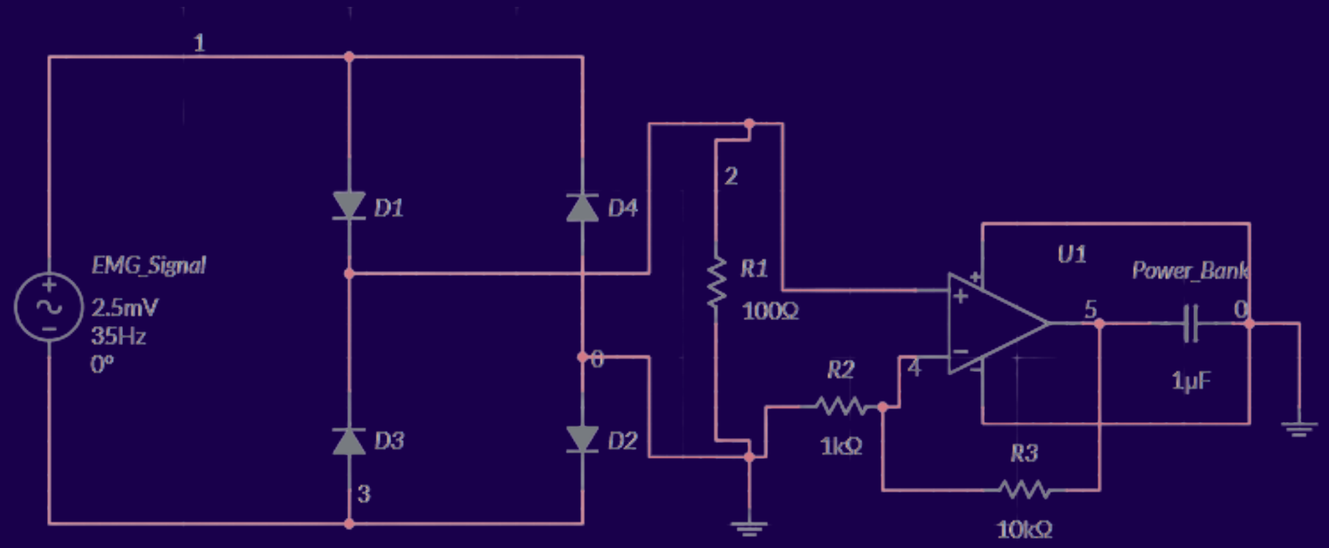
How does electromyography (EMG) work?

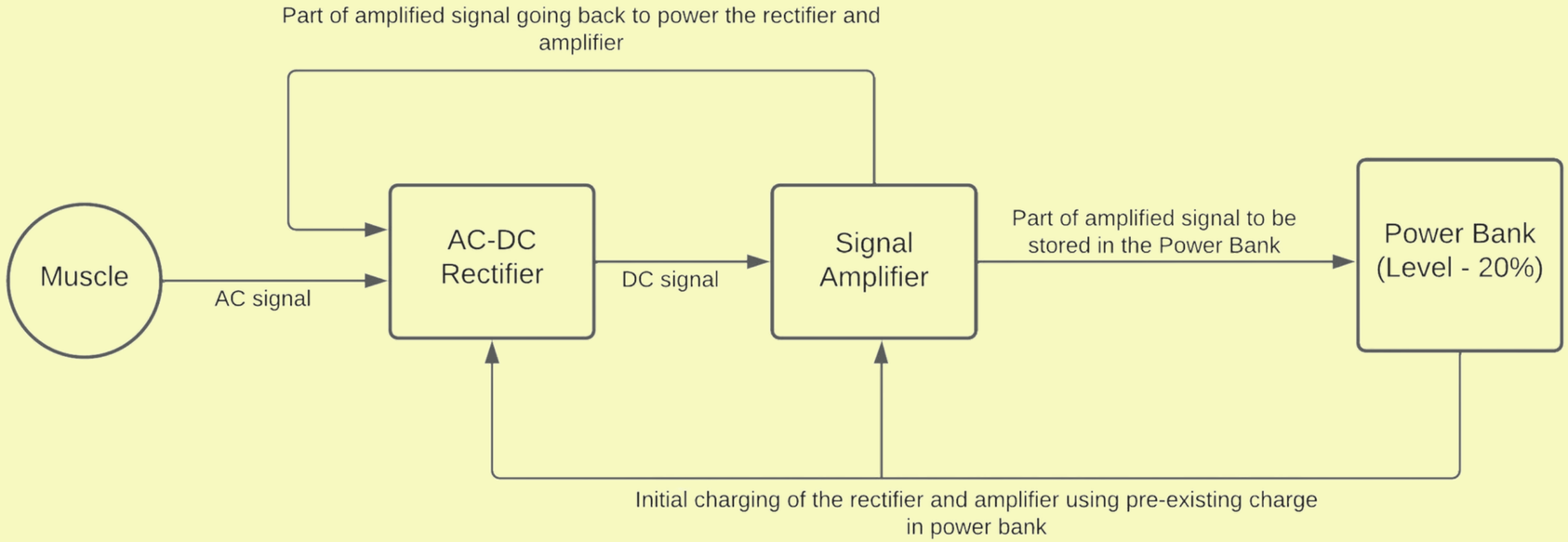
Electricity generated through muscle activation

(Membrane Current) * (Resistance)



Circuit Design





Product Design

Designed for activity

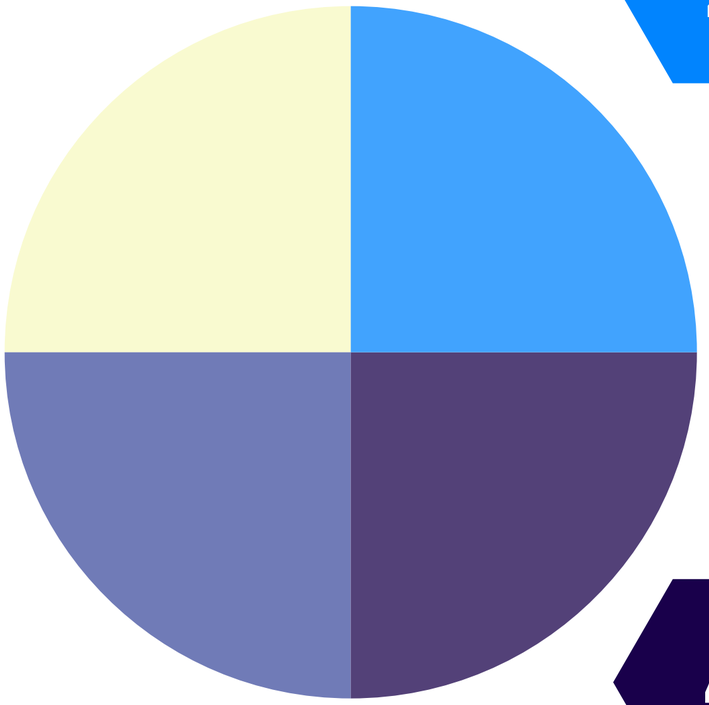
Electrodes in clothing

Potential Energy Sources

1

EMG

The generated electricity through the depolarization of muscles.



2

Piezoelectricity

Ability of certain materials to generate an electric charge in response to applied mechanical stress.

3

Luminescent Solar Concentrators (LSC)

Capture diffuse ambient light and transmit its energy to a solar cell, which then converts light into electrical energy.

4

Thermoelectricity

Converts temperature differences into electrical voltage.

Further Markets To Explore

Hikers

Athletes

Environment Conscious People

Conclusions

Accessible

Renewable

Eco-Friendly

Innovative

Sustainable

Versitile

Numerous Applications

Questions?