

EdenPump- A Self-powered Wearable Polymer Muscle Pump for Wound Care Treatment

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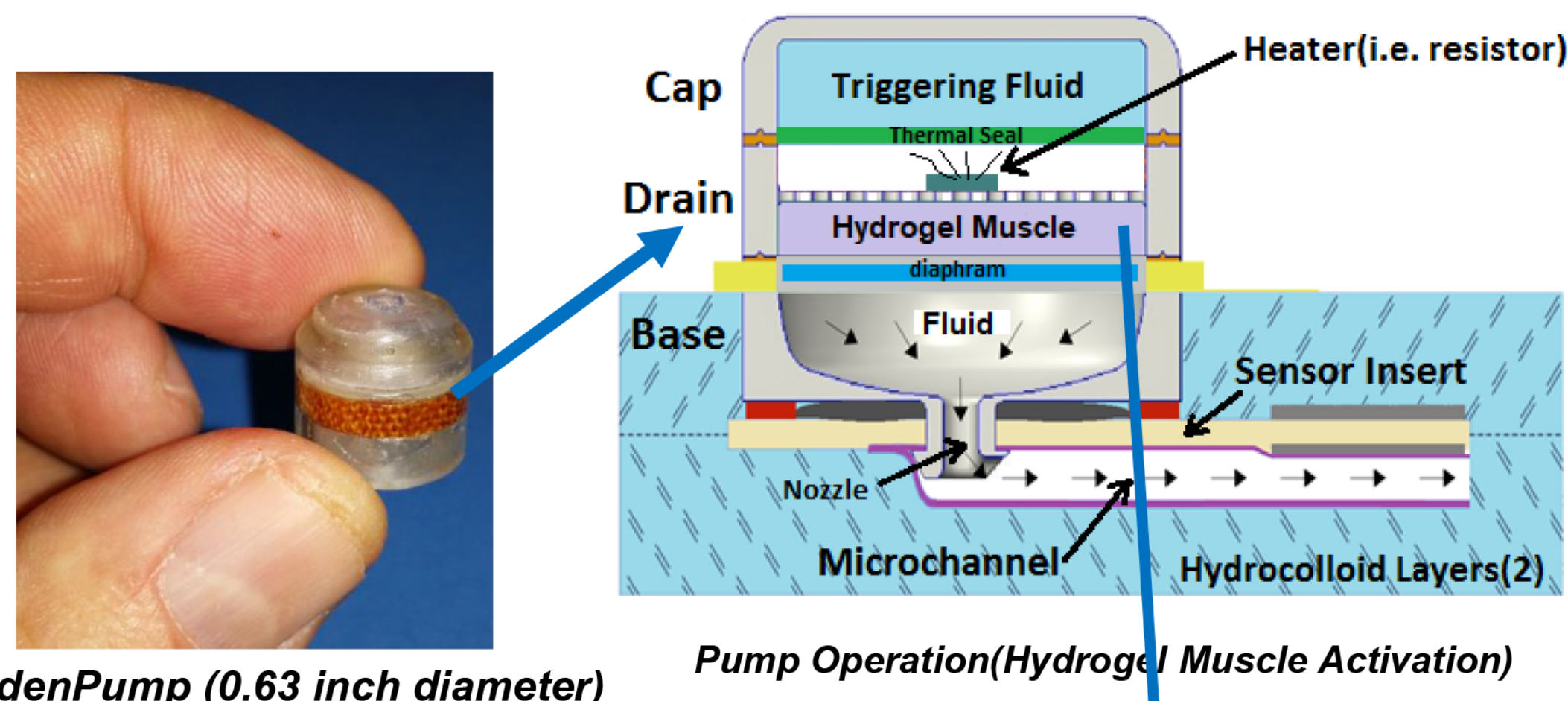
Diabetic Foot Ulcer Problem



Key Facts-

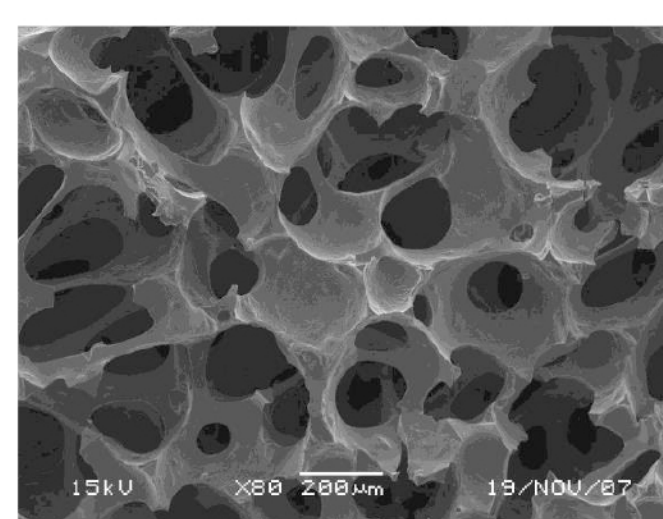
- 9.1 to 26.1 million diabetic foot ulcers develop per year worldwide¹
- 785 million outpatient visits(between 2007 and 2013) due to DFU and infection²
- \$176 billion per year in US for diabetic direct costs³
- Diabetes and wound complications around the globe results in one major foot amputation every 30 seconds, over 2500 per day⁴
- The lifetime incidence of foot ulcers has been estimated to be 15 to 25% among persons with diabetes⁵
- Stalled wounds are a major problem for diabetic patients

EdenPump Details



EdenPump (0.63 inch diameter)

Pump Operation(Hydrogel Muscle Activation)



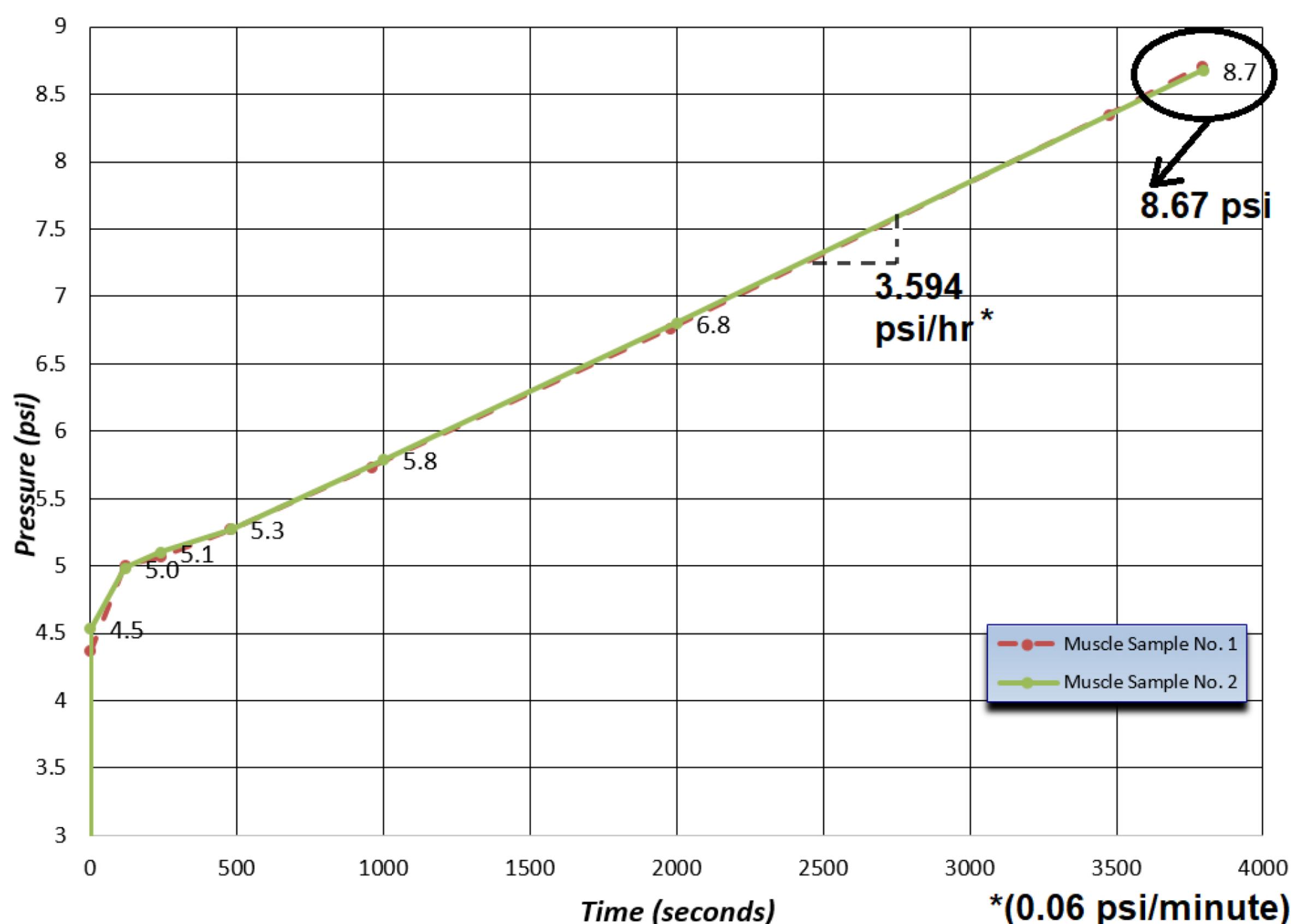
Superporous Hydrogel Muscle(80X)



Hydrogel Muscle

- The EdenPump is the world's first disposable self-powered body worn pump for wound care streaming therapy- 9,046,085 (US patent)⁶
- Multiple triggering options- heat, vibration, pressure, position
- Clinically Proven- for a smart skin barrier(i.e. smart bandage)
- Fluid Capacity-0.1 to 10 milli-liters(up to 10 ml per hour) in future

Pump Muscle Test Results



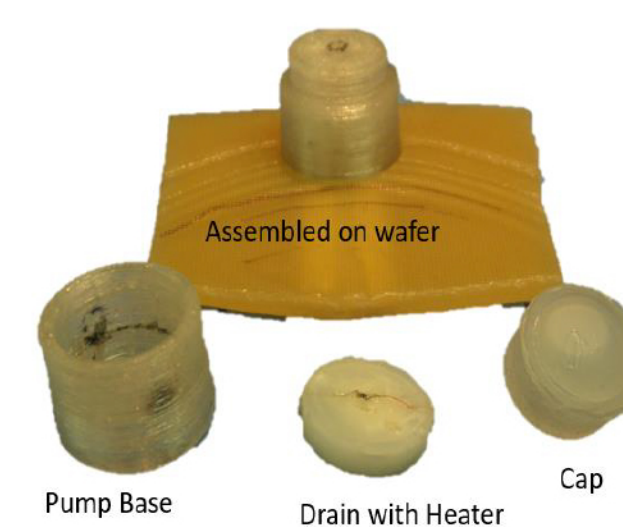
Key Applications



Wound Irrigation



Disposable Wound Pump Therapy



Smart Bandage/Skin Barrier (Hydrocolloids)

Conclusions

- EdenPump is a novel US patent approved technology for disposable wound therapy and wound streaming applications
- Test data indicates pump pressure 9+ psi for body-worn pump size applications
- Pressure rate output: 3.6 psi per hour and a very linear response(rate can be adjusted by muscle size/porosity/pretrigger state(wet vs. dry), hydrogel chemistry, hydrogel interpenetrating polymer networks(IPNs), diameter of pump delivery orifice)
- Potential Applications include: Smart bandages, skin barriers, disposable wound therapy, wound irrigation, tissue positioning/separation,
- Delivery of antibiotics, antiseptics, sealants, anti-epileptics, corticoids, hormones, and chemotherapy are achievable

Acknowledgements

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