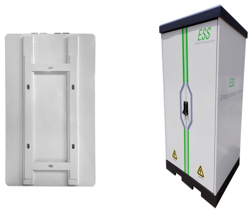
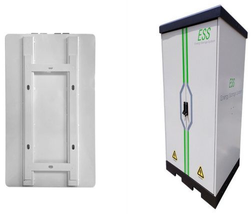
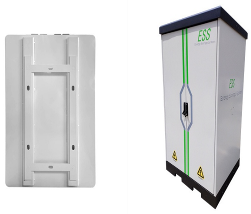
ENERGY STORAGE FOOT AND ANKLE MOVEMENT



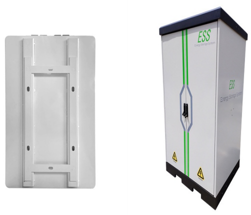
Do intrinsic foot muscles contribute to elastic energy storage and return? In this paper,we present the first direct evidence that the intrinsic foot muscles also contribute to elastic energy storage and returnwithin the human foot. Isometric contraction of the flexor digitorum brevis muscle tissue facilitates tendon stretch and recoil during controlled loading of the foot.



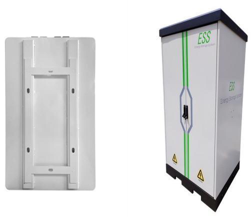
Is a safe foot the original energy storing foot? Although not a brand new design,the SAFE foot (Stationary Ankle Flexible Endoskeleton) has recently been advertised as "the original energy storing foot." In our view,this may be stretching the point,since we believe the flexible keel serves primarily to dissipate energy as it accommodates to irregular surfaces.



Does the foot generate energy during non-steady-state locomotion? While its function during other tasks is less clear,recent evidence suggests the foot and its intrinsic muscles can also generate or dissipate energybased on the energetic requirements of the center of mass during non-steady-state locomotion.



Do foot muscles contribute to energy dissipation and generation? Our results indicate the foot's contributions to energy dissipation and generation remain relatively constantwith increasing COM work demands. We observed a consistent reduction in work at the foot and ankle when the intrinsic foot muscles were unable to actively contribute to energy dissipation and generation.



What is an energy storing prosthetic foot? There are currently no accepted definitionsof what constitutes an "energy storing" prosthetic foot. In fact,there is currently no hard data to demonstrate any energy savings at all,despite numerous anecdotal reports.

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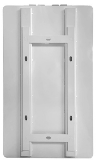
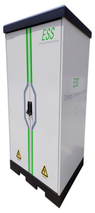
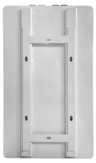
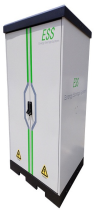
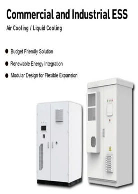



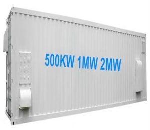
What are the benefits of controlling the energy function of the foot? An additional benefit of actively controlling the energetic function of the human foot is the potential to transform the foot from an energy conserving structure to that of an energy damper or motor, when locomotion requirements change.

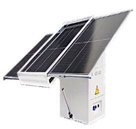
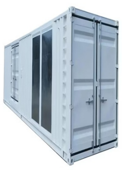
To account for any uncertainty in joint power and energy estimates caused by the movement or mis-location of the axis of rotation in NA-ESR prosthetic feet, several groups ???


Axial feet have mechanical ankle joints that mimic the movement of a natural ankle. There are two types: single-axis and multi-axis. Dynamic response feet are also called energy-storage-and-return (ESAR) feet. They ???





For the amputee, there is a wide range of prosthetic foot selections to accommodate almost every lifestyle. As with other prosthetic componentry, advancing technology has expanded choices in the prosthetic foot ??? from the ???

The novel methodology proposed may act as an effective tool for the design, analysis and prescription of energy storage and return (ESAR) prosthetic feet. Discover the world's research 25+ million

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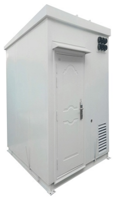
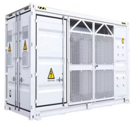
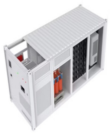
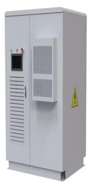
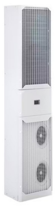



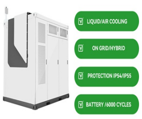
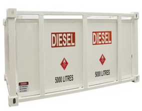
Elastic energy storage and rapid recoil during ankle push-off are facilitated by the Achilles tendon, which is attached to the Soleus (SOL) and Gastrocnemius (GAS) muscles 18, ???



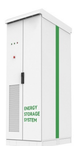
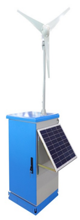

This not only provides excellent energy storing and release properties but also works in harmony with the range of movement in the ankle to provide a natural and comfortable walking experience. Natural Motion & Control. hydraulic ???

This also might allow an easier transition to a more sophisticated design later, since the flexible keel is a common characteristic of all current "energy storing" feet. Other Designs. Although ???

The proposed prosthesis is mainly composed of the rolling conjugated joints with a bionic design and the carbon fiber energy-storage foot. We investigated the flexibility of the prosthetic ankle ???

Energy storage and return (ESR) feet have long been assumed to promote metabolically efficient amputee gait. However, despite being prescribed for approximately 30 yr, there is limited evidence

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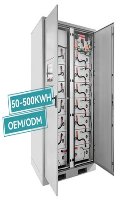
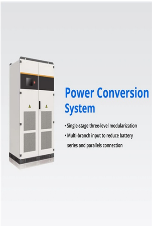
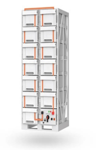
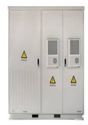
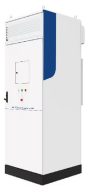
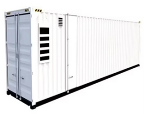




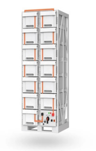
Background There are many studies that have investigated biomechanical differences among prosthetic feet, but not changes due to adaptation over time. There is a need for objective measures to quantify the ???

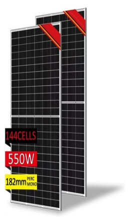
Energy storage and release. In the literature different methods are described to assess energy storage and release of prosthetic feet. Some authors calculated an efficiency parameter from ???

These findings suggest that there is an interplay between the energy generated by the ankle and absorbed by the foot. This interplay should be considered when designing orthotic and ???




Energy storage and return (ESR) feet are passive prostheses capable of storing elastic energy during midstance and returning it during late stance to help transition the center of mass over ???

in the torque???angle relationship), the ankle prosthesis can produce multiple energy storage and return profiles. Where conventional passive prosthetic feet can produce nonlinear ankle ???