

# Distributed Embedded Energy Converter Technologies – DEEC-Tec – for Marine Renewable Energy

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*If I would have asked people what they wanted, they would have said faster horses.*

- Henry Ford [maybe]

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# Description

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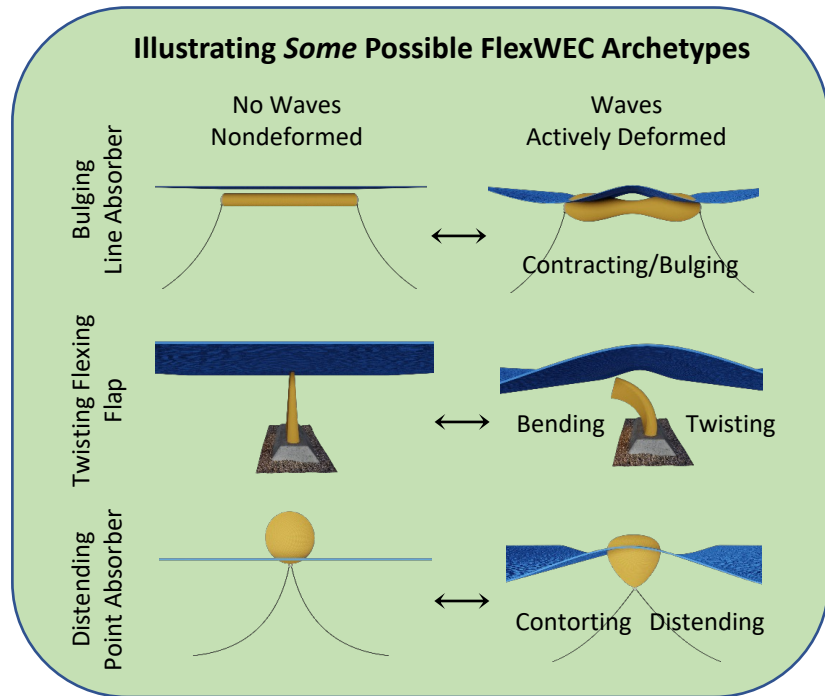
Distributed Embedded Energy Converter Technologies (DEEC-Tec) is and its application to ocean wave energy conversion.

# DEEC-Tec

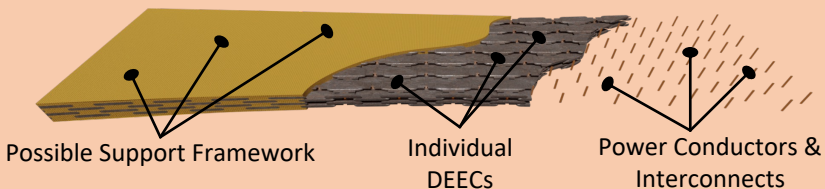
## Ocean Wave Energy Conversion

### Individual Distributed Embedded Energy Converters (DEECs)

- Small; less than a few centimeters.
- Energy transducer; physical phenomena leveraged.
- Structural mechanism; means of housing and interconnection.



### DEEC-Tec Metamaterial; An Example Volume



# Motivation

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A vast technology domain, with strong potential, that is under-explored.

# Motivation

- A very large technology domain that is highly under-explored.
- Shows strong potential for impactful development of innovative ocean wave energy converter (flexWEC) concepts:
  - Inherent broad-banded conversion of ocean wave frequencies.
  - Removing the need for large, highly loaded, rigid bodies.
  - Innate redundancy.
  - Eliminating force concentrations acting upon singular prime-movers, generators, et al.
- Directly aiming to support industry:
  - Aiming to broadcast this domain's possibilities and encourage its consideration.
  - Due diligence – that we are properly in-the-know regarding this new technology domain's developments.

# Outcomes

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Characterizing the DEEC-Tec domain: Developing specification documents and reports regarding those processes known for DEEC-Tec innovation, modeling, empirical evaluation, and fabrication.



# Outcomes

- Research specifications & methodologies for individual DEECs and DEEC-Tec metamaterials.
- Research specifications & methodologies for flexWEC topologies and morphologies.
- Research specifications & methodologies for manufacturing and fabrication for DEEC-Tec.
- Development of report aimed at standardizing DEEC-Tec concepts and nomenclature.

## Special Thanks to the entire DEEC-Tec Team:

James Niffenegger, Nicole Mendoza, Stephen Chamot, Lauren Ruedy, Elaine Buck, Jochem Weber

## AND:

A special thanks to all of you; for your interest and attention!

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<https://www.nrel.gov/water/distributed-embedded-energy-converter-technologies.html>

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