













Ground Engineering Solutions

Engineered Bar Systems Concrete Reinforcement Products



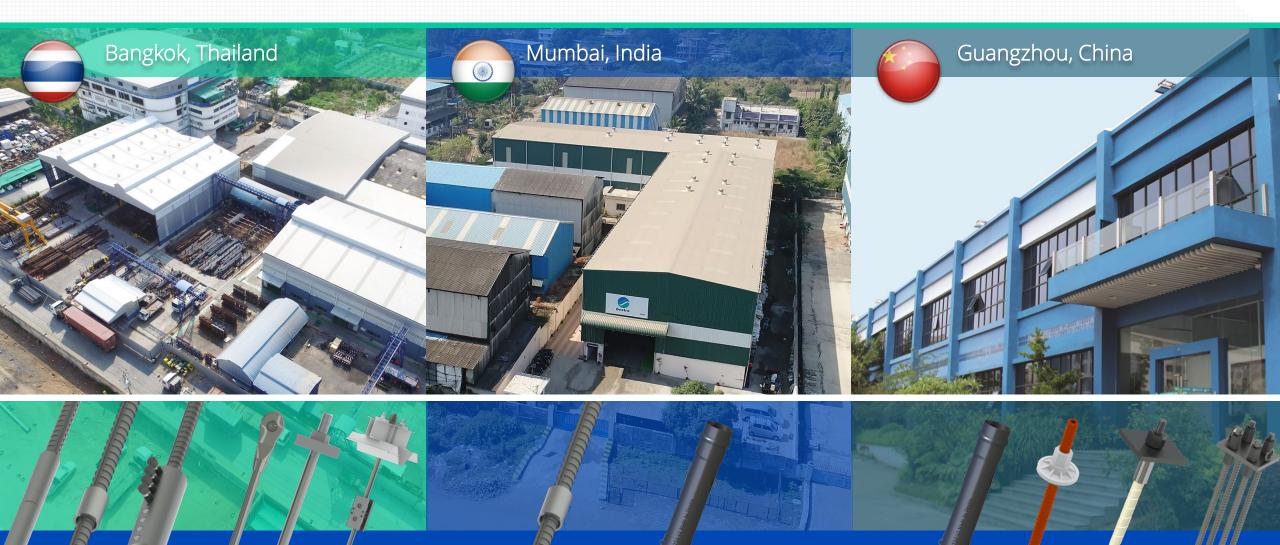


## Worldwide presence

86 Distributors • 13 Offices • 3 Factories

## Manufacturing capabilities





### Worldwide reference











ISO-IEC 17025:2015 accredited laboratory featuring worldwide rebar library











#### **Product Certification**





































#### Challenges & Opportunities for ports and shipping



### INNOVATION

Production processes

Materials

**Applications** 

### Challenges & Opportunities for ports and shipping



Speed of execution & increase in productivity



Sustainability & Durability

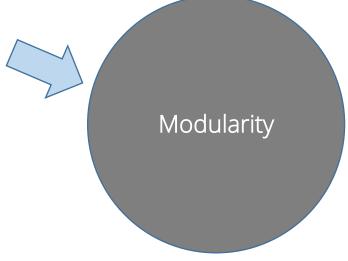
### INNOVATION

Production processes

**Materials** 

**Applications** 





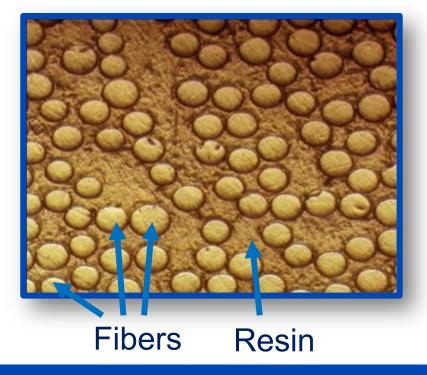
### Introduction to Composite Material

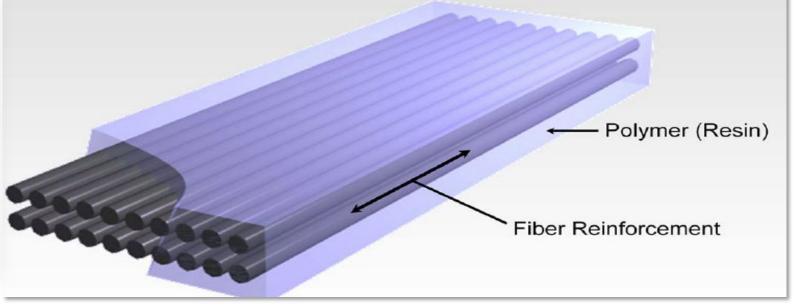


- FRP = Fiber Reinforced Polymers
- Fiber = Glass / Aramid / Carbon / Basalt...
- Resin = Polyester / Vinylester / Epoxy ...









## Construction of quay & jetty







Outer skin of wall in contact with seawater

## Industrial Complex on the seashore (1/2)







GFRP rebar for concrete at grade (flat work) by the coast-line

### Industrial Complex on the seashore (2/2)







Double Corrosion Protection (DCP) anchor with 100+ years lifetime





#### **Corrosion resistant anchors**

- Steel + corrugated pipe
- GFRP material

## Storage of Oil & Gas at port terminal



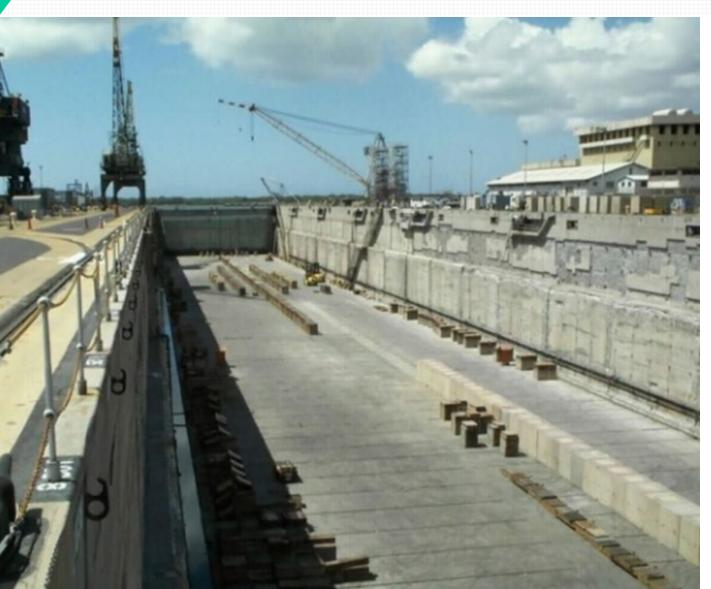






## **Dry-Dock rehabilitation**







Grid of 19mm (#6) GFRP bars doweled and epoxied in place

## Jetty Repair / External Strengthening









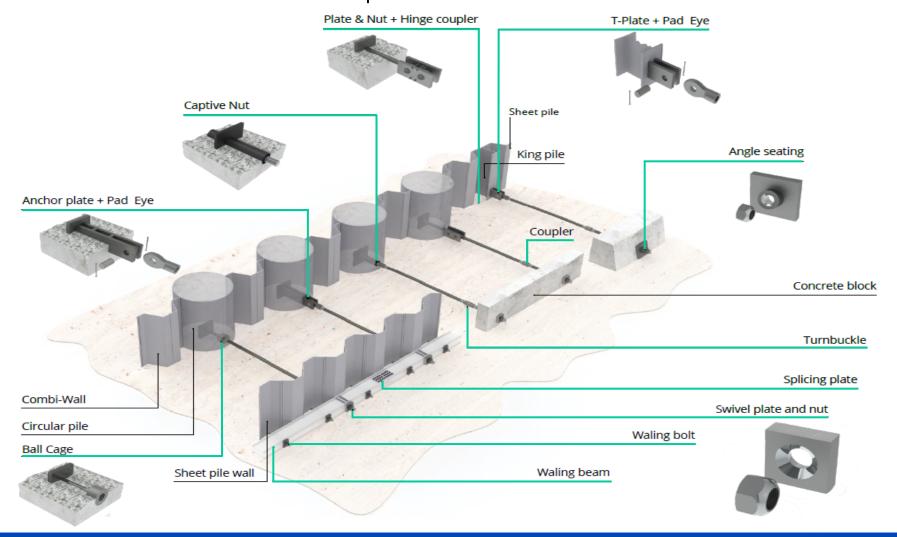


Concrete with GFRP dowels & post-tensioned steel bar





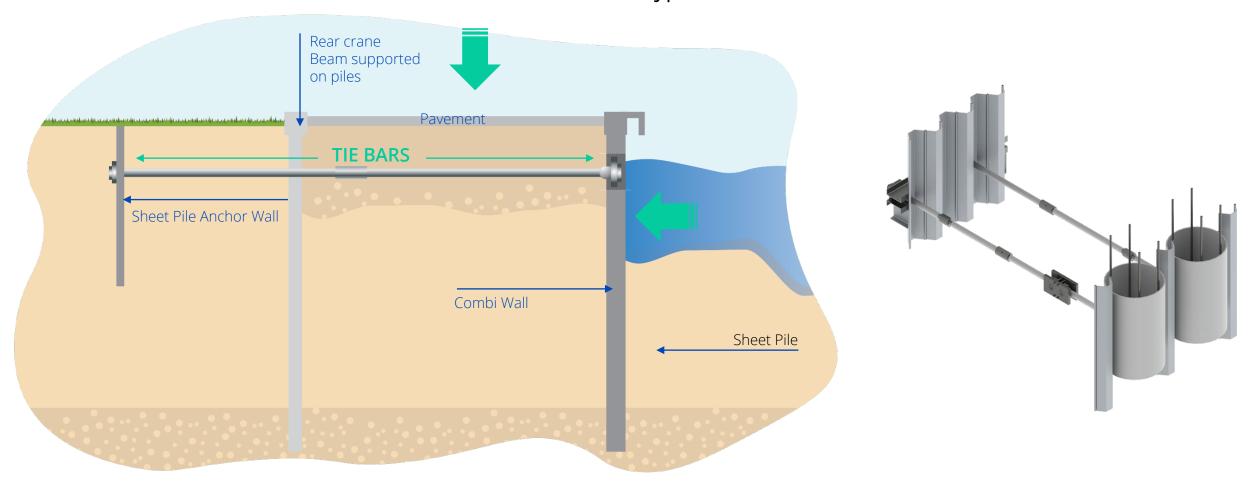
"Dextra Marine Tie Bars are used in port construction to anchor waterfront structures"







"Dextra Marine Tie Bars can be used with different types of marine wall structures"

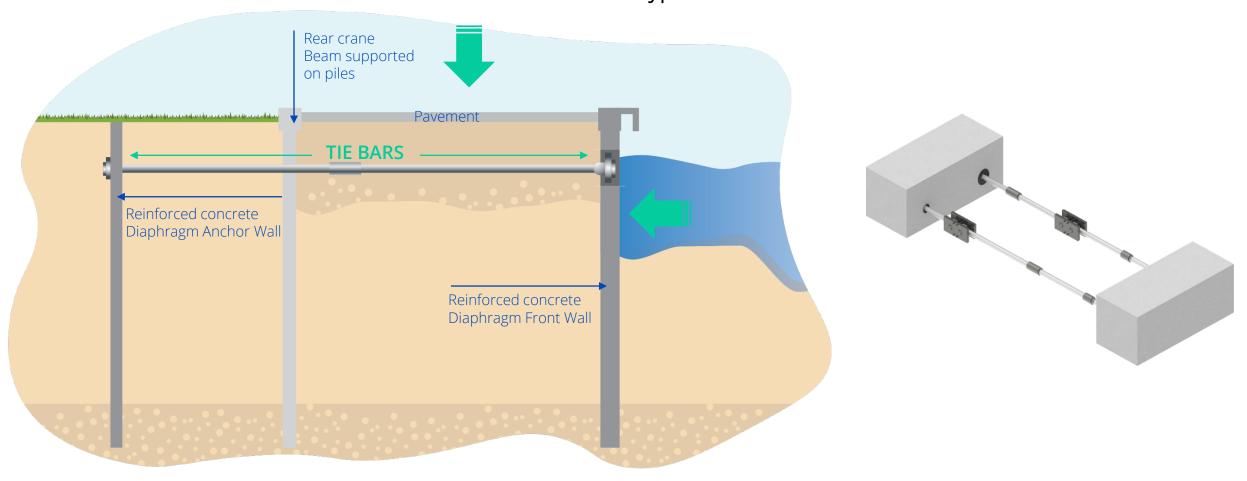


Marine tie bars in combi wall





"Dextra Marine Tie Bars can be used with different types of marine wall structures"



Marine tie bars in concrete diaphragm walls





Steel Piles to Sheet Piles



**Tubular Piles** 







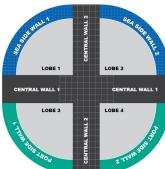
## Dextra Couplers (Caissons)



"Dextra Couplers are splicing systems designed for the connection of concrete reinforcing bars"















## **Dextra Couplers (Caissons)**









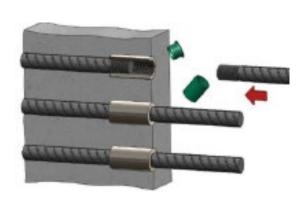












#### **CAD & BIM Tools**





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**Dedicated support** 





















PT Bars















**Tekla** 

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# Thank You



www.dextragroup.com