
Emirates
DuSense
دبي لحلول الاستشعار
Bi-Directional Static Load Test
It's Easier, Reliable and Cost Effective
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DuSense Emirates
دبي لحلول الاستشعار

# Use the easier, reliable , and cost effective SLT

# Super-Cell

# Bi-Directional Static Load Test

DuSense is a Dubai based company specialized in High-Tech instrumentation systems for the Construction and Structural Monitoring Markets, we have more than 12 years' experience with pile testing in the Middle East market including many hundreds of Bi-Directional Static Load Test.

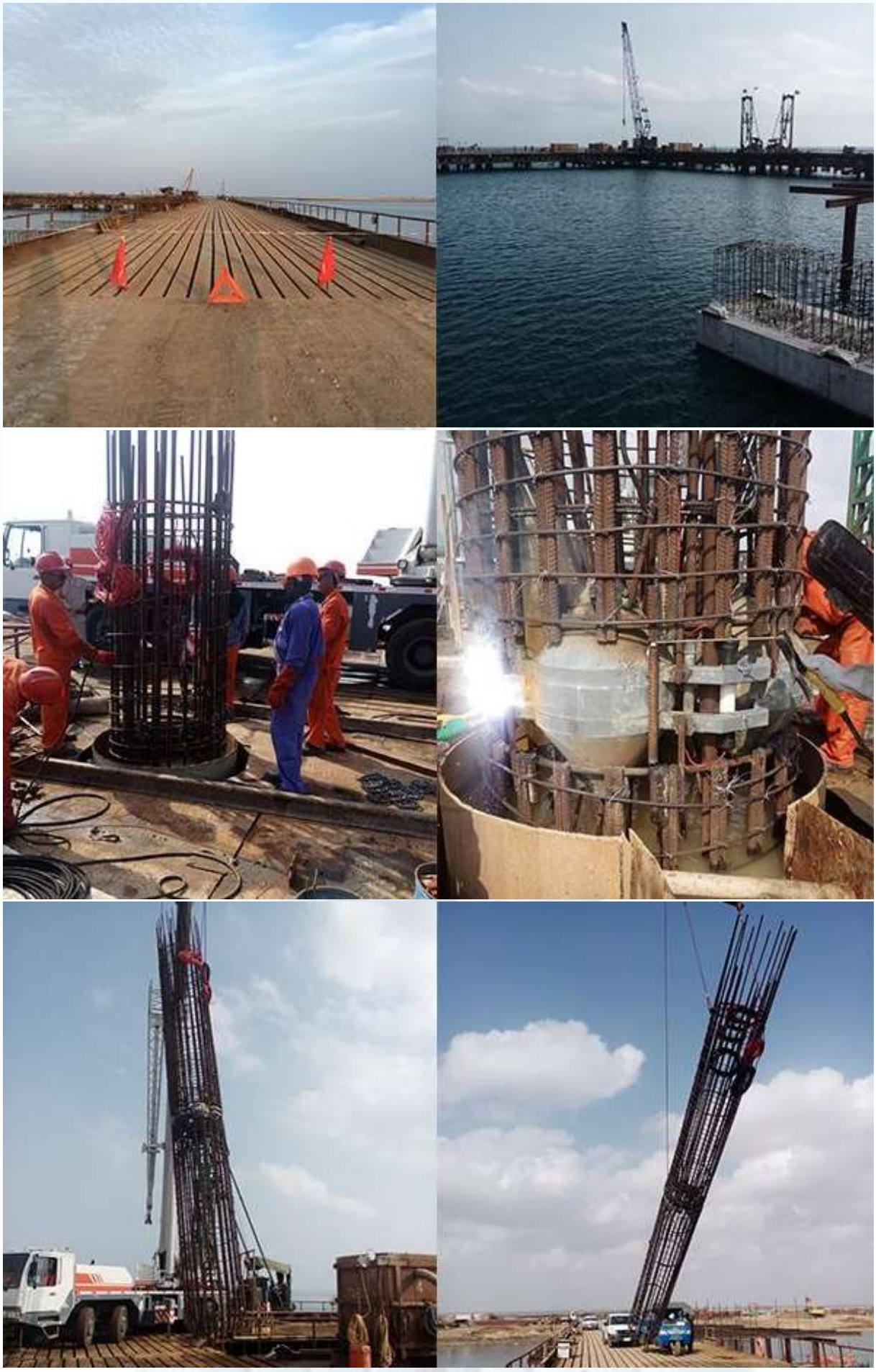
We can offer you via our Dubai office the complete service from designing the test through to analysis of the test data.

"More than 600 sets of Super-Cells are delivered from January to April 2016 globally."

Super-Cells were introduced to the global market in 2005, since then more than 2,000 tests have been conducted around the world.

Hail University, Hail, Saudi Arabia

(4 nos. 1000mm dia Pile were tested using the Super-Cell Ring Cell© method, the piles were tested to 675tonnes, year 2016)



Super-Cell Technology, Sudan Port of Africa
1200mm ring-type for 8MN load and 1500mm combined for 10MN load, year 2015



Hangzhou Bay Bridge
(Longest Cross-Sea Bridge ever built, 70 MN load, year 2006)


Qingzhoufang Residential Building, Macau, China
(1,000 mm dia pile, 11.7 MN load, year 2012)


Catholic High School, Singapore
(800mm dia, 6.12 MN load, 1,000 mm dia, 5.72 MN load, year 2014)

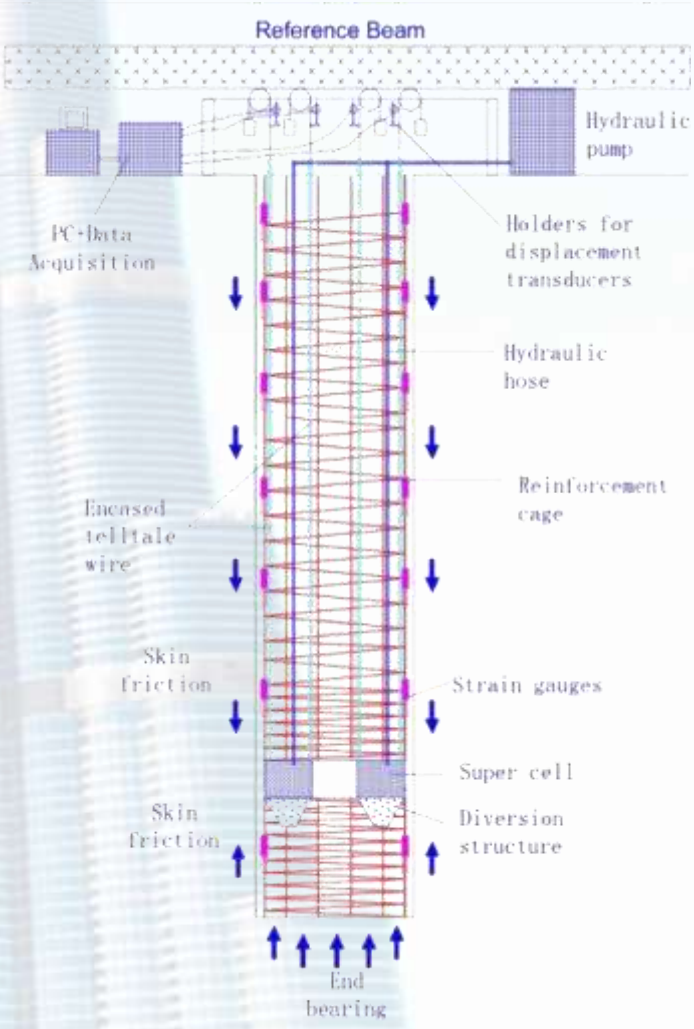
"Super-Cell" is a hermetically sealed expandable steel pressure cell specially designed for load testing of piles, it's innovative design is the most suitable for casting into concrete piles for Bi-Directional Static Load Testing. Super-Cells are not like earlier design Bi-Directional Load Cells which are a type of modified hydraulic cylinder using a sliding piston, cylinder and seals, the patented Super-Cells have a larger surface area, low height, and light weight, which provide greatly improved loading performance using much lower pressures of <30Mpa. Super-Cell is often the preferred choice for Working Pile tests where due to it's large cross-sectional area it can be reliably grouted to virtually restore the full bearing capacity of the pile. The Super-Cell design has improved flexibility under high load conditions too where it can tolerate a good degree of non-uniaxial loading. Super-Cells are available in a wide variety of different shapes and sizes depending on the pile diameter and purpose of the BDSL test.


Ring Cell

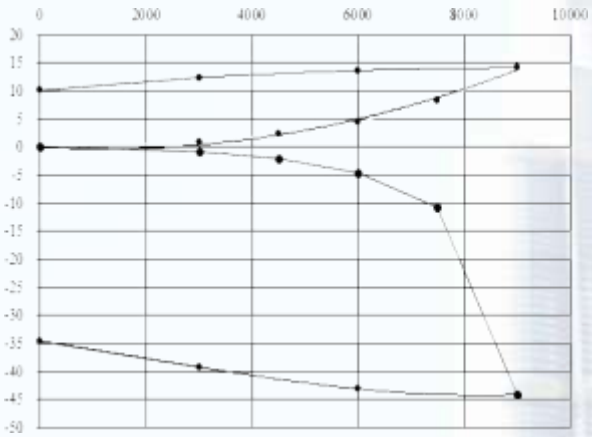
Combined Cell

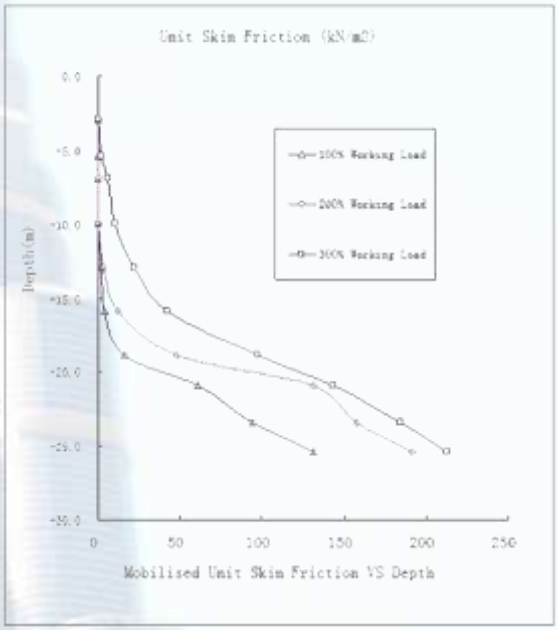
When loaded as the Super-Cell inflates, it mobilises the upper shaft's side shear and the lower shaft's side shear and end bearing.

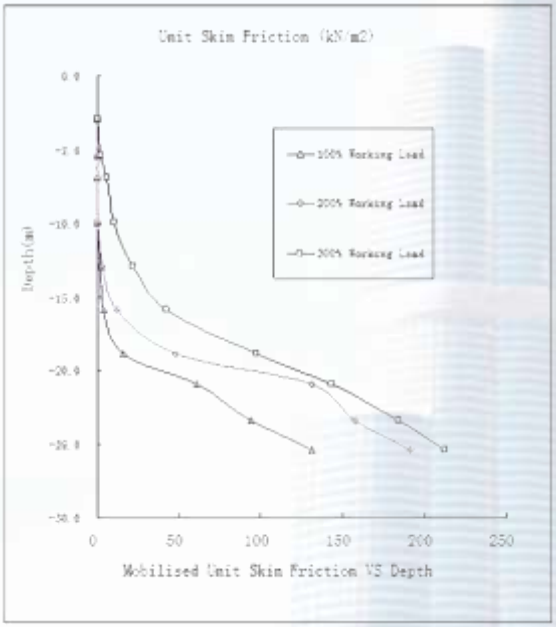
Calibration Process

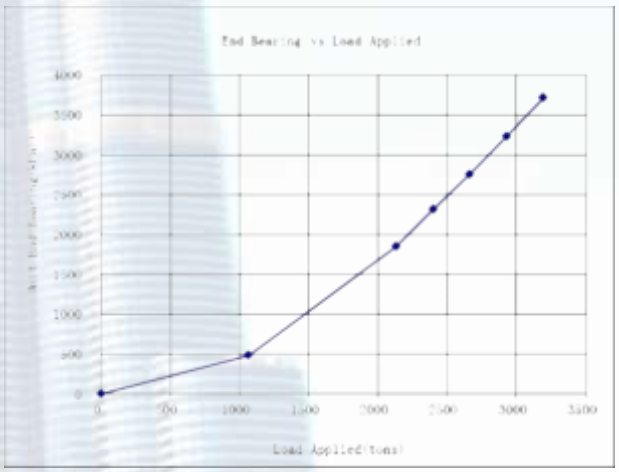


A typical Bi-Directional load test is performed until the ultimate capacity of either side shear or end-bearing is achieved, so the maximum load capacity of the pile can be accurately obtained. Installation of strain gauges embedded at different layers will indicate how the load capacity is distributed through the pile's length.






Bi-Directional load test has been a well proven technique in many thousands of projects all over the world, it has many advantages over conventional top-down static load testing including -

- High Test Load capacity—the Super-Cell has been used to loads of >5,000 tonnes under suitable conditions.
- Reduced working area—Testing can be conducted in a very confined area.
- Time—Testing is able to commence within 7 to 10 days from pile installation.
- Economy—The Super-Cell method becomes more economical as load increases, unlike conventional static load test.

KINDLY PLEASE NOTE THE MANY BENEFITS SUPER-CELL BDSL has over other techniques

1. There are no thick heavy Bearing Plates to supply and install so cost to contractor is lower.
2. The Super-Cells have upper and lower concrete cones which help to avoid laitance build-up and act as bearing pads for the Super-Cells.
3. The cell is lighter and easier to handle so time to install in to cage is less so cost to contractor is lower.
4. The cell is a patented Ring design with central tremie hole so easier to concrete and no risk of laitance build-up under the cell or cell bearing plates.
5. The cell operates at half the pressure of other techniques so it is safer and more reliable.
6. The cell covers bigger cross sectional area of the pile so it is more representative of the actual pile loading conditions.
7. The cell does not have sliding seals which can leak and get damaged during installation (refer to DuSense Comparison Table for more details).
8. The cell is a special design fabricated all welded fully sealed construction that does not depend on O rings for sealing which gives improved reliability, the cell is flexible and accepts non-uniaxial loads.
9. There is no risk of seizing under load like other piston cylinder methods due to misaligned forces as cell opens under high pressure. The Super-Cell is compliant and quite flexible it's very design readily accepts non-uniaxially applied forces.