

土工試驗組

大地工程試驗

大地工程試驗及檢監測技術

◆ 試驗室認證

由全國認證基金會(TAF)和國際實驗室認證聯盟(ILAC-MRA)針對ISO 17025進行認證。試驗程序多依循ASTM或CNS規範辦理

◆ 土壤試驗

依據ASTM或CNS規範進行土壤試驗，試驗項目包括:粒徑分析、土壤分類、直接剪力、壓密、透水、三軸壓縮等多種土壤力學性質測與分析。

◆ 岩石試驗

依據ASTM、ISRM等規範進行系列岩石試驗，包括物理性質、動(靜)彈性、岩石單軸壓縮、弱面直接剪力等多種力學性質試驗。

◆ 土壤動態性質試驗

為國內目前唯一商轉之土壤動態試驗室，可執行項目包括土壤動態三軸強度、特性以及共振柱試驗，近期內更將擴充反覆單剪(Cyclic Simple Shear)試驗設備。

◆ 現地試驗

現地試驗執行實績包括平板載重試驗、現地直剪試驗、孔內變形試驗、雙封塞水利試驗以及樁載重試驗，亦可依據計畫需求，為業主規劃系列試驗。

◆ 監測儀器開發

依據業主需求，設計、開發並製作土工監測系統及所需系列監測儀器。



▲ 土壤和岩石試驗



▲ 動態三軸試驗



▲ 現地樁載重試驗



▲ 雙環入滲試驗

Groundwater Resources Impact Assessment

◆ 海上鑽探調查規劃

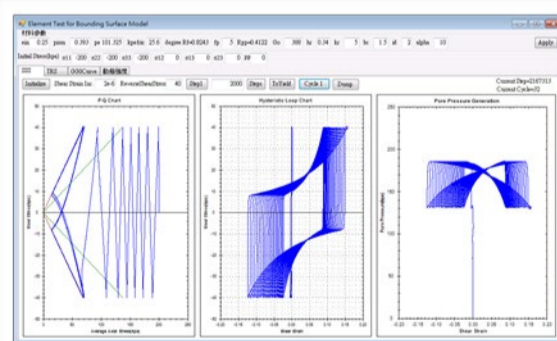
依據不同形式基礎設計需求，研擬離岸風力海上鑽探調查計畫。規劃現地及試驗室試驗，以求取最佳設計參數。本社產製之離岸風場地質調查分析報告(GIR)為目前國內唯一通過DNV-GL認證之地調報告。

◆ 地震及反覆荷載行為分析與設計

台灣海峽離岸風場設計中，地震及極端風力之影響無可迴避，為精準地模擬土壤於反覆荷載作用下的反應行為，本社除以精密試驗設備量測動態反應外，更可以先進的有效應力數值模型，進行土壤結構互制分析。

◆ 地盤反應分析

地震時特殊地盤對震波可能有放大或縮減作用，本社運用反覆荷載試驗所求取之特性，模擬地盤在地震下之反應，提供做為離岸風力基礎設計之依據。



▲ 鑽探平台



Geotechnical Test Group

Geotechnical Field and Laboratory Testing

Geotechnical Testing and Monitoring

◆ Accreditation

Sinotech Geotechnical Laboratory was accredited for ISO 17025 by TAF and international recognized by iLAC-MRA. The certificated standard include ASTM and CNS.

◆ Soil Mechanics Tests

ASTM standards are implemented in most of the soil mechanics tests, which include grain size distribution,, soil classification, direct shear, tri-axial, consolidation and other tests.

◆ Rock Mechanics Tests

ASTM and ISRM standards are implemented in most of the rock mechanics tests, which include physical properties, elasticity, compression and joint shear tests etc.

◆ Soil Dynamic Tests

Sinotech Geotechnical Laboratory is the only commercially operating laboratory that can perform soil dynamic tests, which include cyclic tri-axial test and resonant column test, furthermore, the bender element and cyclic simple shear test will be implemented by the end of 2017.

◆ Field tests

Track record of field test include plate load test, pressuremeter test, double packer test and pile load test. Planning of field test is also included in the scope of service.

◆ Development of monitoring system

Planning, design and manufacturing of customized monitoring system.



▲ Laboratory

▲ Dynamic Tri-axial



▲ Pile Load Test

▲ Infiltration Test

Groundwater Resources Impact Assessment

◆ Planning of offshore site investigation

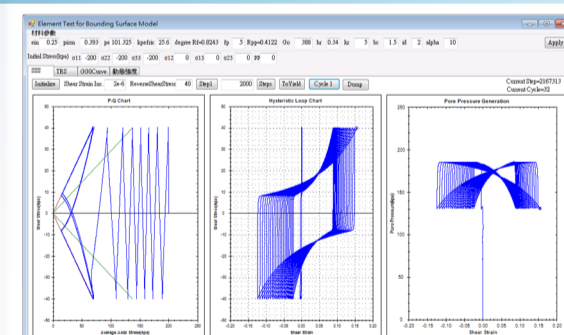
The offshore site investigation was drafted according to the type of offshore wind farm foundation. The objective is to obtain the most optimized design parameters.

◆ Seismic and cyclic load analysis and design

Earthquake and extreme metocean conditions are the major challenge of foundation design of offshore wind farm in Taiwan. In addition to the advanced cyclic load test, sophisticated numerical model such as effective stress model was also implemented in Sinotech's seismic analysis.

◆ Site response analysis

The seismic waves tends to be amplified or damped during earthquake due to the local strata effects. These effects can be simulated by site response analysis, which is an important factor on offshore foundation seismic design.



▲ Offshore Site Investigation

