國際級試車場(12條測試道)
International proving ground (12 test tracks)

1. 斜坡測試道 / Test Hills
2. 標準不良路 / Belgium Road (Pave)
3. 滑行測試道 / Coastdown Test Track
4. 振動噪音測試道 / Noise Vibration & Harshness Surfaces Test Track
5. 煞車性能測試道 / Brake Performance Test Track
6. 噪音測試道 / Pass-By Noise Test Track
7. 綜合耐久測試道 / General Durability Test Track
8. 高速周回路 / High Speed Circuit
9. 綜合性能測試道 / General Performance Test Track
10. 動態平台 / Dynamic Platform
11. 溼地操安測試道 / Wet Handling Circuit
12. 乾地操安測試道 / Dry Handling Circuit

斜坡測試道 Test Hills

設置有12%(長68m)、18%(長59m)、20%(長49m)、30%(長29m)、35%(長24m)、42%(長18m)及50%(長14m)7種不同坡度之測試道。

Seven test hills, with gradients of 12%(68m), 18%(59m), 20%(49m), 30%(29m), 35%(24m), 42%(18m) and 50%(14m).

標準不良路 Belgium Road (Pave)

標準不良路以花岡岩塊建構而成，亦稱比利時路面，路寬4公尺，圈長1,101公尺，包含高頻、低頻與極嚴苛路面。

The road is made bumpy through laying granite blocks. The closed curve alignment is selected whereby S curves with 4m wide, and the total length is 1,101m. It contains high frequency, low frequency and extreme severe levels.

滑行測試道 Coastdown Test Track

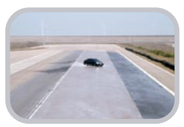
測試道長1,569公尺及1,811公尺，兩端設置迴車道。

Two test tracks of the length are 1,569m &1,811m, and the curved sections are at each end of the track to allow vehicles to turn and accelerate during coastdown operation.

振動噪音測試道
Noise Vibration & Harshness Surfaces Test Track

包含6種低振幅路面(段差路、橋樑接縫路、人孔＋突起路、裂縫路、粗糙路與R10突起路)、9種高振幅路面(短波狀路、波狀路、長波狀路、起伏路、大型起伏路、低窪路、瀝青不良路、H80雙波狀路與洗衣板路面)、3種噪音路面(粗面路、排水性路面與低噪音瀝青路)。另設有底盤強度測試區(包含9種不同路面：路緣石、停車輪止、突起路、凹窪路、輪轍路、排水溝、壕溝、鐵軌與止檔)。

Six low amplitude surfaces (stepped joint road, bridge expansion joint road, manhole & projection road, crack asphalt road, rough asphalt road, and radius-10mm projection road), 9 high amplitude surfaces (short wave road, wave road, long wave road, undulation road, big undulation road, bottoming road, patched asphalt road, height-80mm wave road, and wash board road) and 3 noise surfaces (rough texture road, drainage pavement surface, and low noise surface) of 4m in width, and chassis-strength test area which contains 9 different surfaces (hump, concave, kerb, rutted, parking stone, drain, ditch, railway, and interference rail), are designed to simulate various road conditions in order to enable evaluations of noise and vibration.



煞車性能測試道 Brake Performance Test Track

設置深水槽路、水膜路及四種不同摩擦係數(μ)之路面，可執行輪胎、煞車系統(ABS)、驅動控制與穩定性等性能測試與評價。

The brake performance test track is designed to arrange wading trough, aquaplaning trough and four straight-line wet grip surfaces are ideal for developing tires, braking systems (ABS), traction control and vehicle stability.

噪音測試道 Pass-By Noise Test Track

噪音測試路面表層符合國際ISO標準之瀝青路面，測試區兩側助跑道寬4公尺、長760公尺。

The surface area, provided on the noise test track, is complied with ISO. The runway is 4 m in width and 760 m in length. Turning loops are set at each end.

綜合耐久測試道 General Durability Test Track

總長度5,432公尺，設置各種特殊鋪裝測試路面，包含砂礫路、AC凹凸路、RC凹凸路、輪轍路、河床路、側傾斜路、積水路、泥濘路。

The General durability test track contains several tracks that simulate poor quality unpaved roads like gravel road, asphalt uneven road, cement concrete uneven road, rutted road, cobblestone road, side slop road, splash road, mud pit road. The total length is 5,432m. Each of these test tracks is linked with a bypass to enable test drivers to freely change among the tracks after completing each circuit.

高速周回路 High Speed Circuit

總長度為3,575公尺，最大彎道坡度38°，設計車速每小時160公里，為橢圓形3車道。

The high-speed circuit is designed with total length of 3,575 m and a banking angle of 38°. The designed neutral speed is 160 km/h. The oval-shaped circuit is divided into 3 lanes.

綜合性能測試道 General Performance Test Track

測試道寬40公尺，長1,042公尺，兩端設置加減速及迴車道。

A 40 m wide and 1,042 m long straight test track with access on the both side.

動態平台 / Dynamic Platform

測試區路面扇形開展，最大迴轉區域達曲率半徑60公尺，加速道長457公尺，測試區平均寬度140公尺。

The fan-shaped expanded and 140 m average of wide platform, the allowable maximum 60 m radius of circle, with a 457 m-long of acceleration lane.

乾地操安測試道 / Dry Handling Circuit

測試道總長892公尺，寬5.5公尺，由彎道曲率半徑20公尺~140公尺之各種圓弧所串接而成，路面摩擦係數約0.9，並具備半徑100公尺、長10公尺圓弧、水膜1公分之旋迴水漂車道。

The 892 m-long and 5.5 m-wide circuit, consisted of series-wound curves with radiuses of 20~140 m, the dry surface of friction (μ) 0.9, with a section of 10 m-long wet curve (100 m radius, 1 cm water height).

溼地操安測試道 / Wet Handling Circuit

測試道總長349公尺，寬6.5公尺，由彎道曲率半徑20公尺及40公尺圓弧串接組成，路面摩擦係數約0.6~0.8，並設置灑水設施。

The 349 m-long and 6.5 m-wide circuit, consisted of series-wound curves with radiuses of 20~40 m, the wet surface of friction (μ) 0.6 to 0.8, with a track watering system.

2019.07

IMPARTIALITY | TECHNOLOGY | SERVICE
公正 | 科技 | 服務

財團法人車輛研究測試中心
Automotive Research & Testing Center

車輛研發創新與知識服務的領導者
THE PIONEER OF TECHNICAL INNOVATIN & KNOWLEDGE SERVICE FOR VEHICLE

為因應國際潮流與深植國內產業能量，車輛研究測試中心不斷自我挑戰與創新，朝向一流的工程技術中心邁進。積極從事先進車輛系統研究與發展，精進測試及分析能量、串連歐美驗證機構，提供業界從研發、設計、製造到性能確認一條鞭的服務，協助台灣優質零組件競逐全球市場以及自主整車工業之發展。

In order to synchronize advanced technology with the world and build up the domestic capacity, Automotive Research & Testing Center (ARTC) keeps overcoming limitations to become the top provider of engineering. We completely devoted to invest in research of advance vehicle system and cooperate with the international institutions to improve the R&D and testing capabilities to provide complete services from troubleshooting, strategy formulation, design improvements and performance verification. Therefore, we established a global certification process reducing export barrier, promoting MIT products, and enhancing development of automotive industry.

地址：彰化縣鹿港鎮彰濱工業區鹿工南七路6號
No.6, Lugong S. 7th Rd., Lukang, Changhua County 50544, Taiwan
TEL：+886-4-7811222 FAX：+886-4-7811333
http://www.artc.org.tw E-mail：service@artc.org.tw

ARTC大事紀 MILESTONE

1990年 · 10月車輛中心成立 / October 1990, ARTC founded.

2000年~2005年

- 2000年10月彰化彰濱實驗室落成 / October 2000, open the Chang Hua Laboratory.
- 2002年7月國內第一座國際級試車場全面啓用 / July 2002, the first domestic Proving Ground launched.
- 2003年10月「機車整車及車輛零組件」電磁相容實驗室啓用 / October 2003, Electro-Magnetic Compatibility Laboratory (EMC) Laboratory (for motorcycle & component) launched.
- 2005年1月國內首座實車碰撞實驗室開幕 / January 2005, the Crash Laboratory launched.

2006年~2010年

- 2006年9月電磁相容檢測實驗室於獲得美國A2LA/AEMCLAP證書；2007年6月獲美國三大車廠(通用、福特、克萊斯勒)認可 / September 2006, EMC Laboratory received A2LA/AEMCLAP accreditation; June 2007, EMC Laboratory was accredited by GM, Ford and Chrysler.
- 2008年10月發表實車搭載先進停車引導系統(APGS) / October 2008, the Advanced Parking Guidance System installed on demo car was announced.
- 2009年11月以「大型車盲點偵測系統」與「影像式適應性頭燈」兩項創新技術獲得德國紐倫堡國際發明展雙金牌 / November 2009, Blind-spot Detection System (BDS) of Heavy Truck & Image type Adaptive Front-lighting System (IAHS) were awarded as the iENA Golden prize.
- 2010年3月發表 i-EV智慧電動車 / March 2010, The intelligent Electric Vehicle (i-EV) prototype launched.

2011年~2015年

- 2011年12月獲經濟部技術處第一屆「國家產業創新獎」-「績優創新研究機構獎」 / December 2011, Awarded by MOEA with Excellent Innovative Research Institution Award from 1st National Industrial Innovation Award in Taiwan.
- 2013年1月巴士等級整車電磁相容研測平台啓用 / January 2013, the Bus Scale Vehicle EMC Research & Testing Platform was launched.
- 2013年7月通過能力成熟度整合模式(CMMI)第三級評鑑 / July 2013,The R&D group achieved level 3 of the Capability Maturity Model Integration (CMMI).
- 2014年8月以「整合式行車智慧系統」獲頒經濟部技術處「法人科專計畫」技術成就獎 / August 2014, the "Integrated Intelligent Vehicle System" received the Technical Achievement Award from the Ministry of Economic Affairs.
- 2015年9月以「先進車輛智慧系統開發與應用技術關鍵計畫」獲頒經濟部技術處「法人科專計畫」價值領航獎 / September 2015, the "Advanced intelligent vehicle system development and application of technology" received the Merit Trailblazer Award from the Ministry of Economic Affairs.

2016年~2019年

- 2016年9月以「節能智慧化車電關鍵技術計畫」獲頒經濟部技術處「法人科專計畫」技術成就獎 / September 2016, The "Intelligent vehicle system development and its application to conserve energy" received the Technical Achievement Award from the Ministry of Economic Affairs.
- 2017年02月 碰撞實驗室取得美國民航局FAA航空座椅檢測實驗室資格 / February 2017, ARTC received FAA Acceptance Latter for airplane seat dynamic testing by FAA, USA (Federal Aviation Administration).
- 2018年11月ARTC攜手宏碁智通等18家廠商共組「自駕車產業聯盟」/ November 2018, Autonomous Vehicle Industry Alliance.
- 2018年8月成功取得哈雷機車實驗室認可，成就「台灣第一」殊榮 / August 2018, Technical Achievement Award from the Ministry of Economic Affairs.
- 2019年2月臺灣智駕測試實驗室開幕，總統蔡英文搭乘車輛中心自駕車親身體驗 / February 2019, President Tsai's Test-ride on an ARTC-developed Autonomous Vehicle during the Opening of Taiwan CAR Lab.
- 2019年4月榮獲「第6屆經濟部國家產業創新獎組織類-績優創新學研機構」/ April 2019, Outstanding Innovation Award for Academic and Research Institutions.

三大領域核心科研，前瞻應用銜接產業需求
Forward Research on 3 Core Technology, Exploit the system of innovation to meet the requirement of industry

車輛聯網
Connected Vehicle

整合車載資通訊與車輛聯網技術，發展「車輛聯網應用服務」「車輛聯網通訊技術」與提供行車安全與便利的行車環境。

Developing the intelligent telematics including the integration of the connected vehicle applications, communication technology and the test platform to provide vehicle safety and convenient environment.

電動節能
Electrified and Green Energy

發展電動車動力與充電關鍵系統整合技術，協助國內整車廠開設發新能源車輛，對應未來低碳時代運輸需求。

Participating in the green energy field and integrating vehicle control and charging system key technologies of electric vehicle.

智慧安全
Intelligence and Safety

運用環境感測、駕駛狀態監控、車輛定位等感測融合技術，開發智慧車輛主動安全控制系統，提升車輛行駛安全。

Using sensor fusion technology for environment detecting, driver status monitoring and obstacles positioning to create intelligent active safety control system and improve vehicle safety.

- 超過40項研發成果，多項已於國內外車廠進行試裝評價。
- 超過100案技轉實績，十餘項進入商品化，已將研發成果落實於車輛的應用上。
- 近年來研發成果參與國際競賽獲日內瓦、匹茲堡、紐倫堡國際發明展，台北國際發明展、國家發明創作獎等獎項，並持續朝技術與商品化應用推進。
- Develop over 40 riveting technologies and most of them have been installed by domestic and overseas vehicle manufacturers.
- Over 100 technologies have been transferred and more than ten of them achieved commercialization, realizes achievements in automotive technologies.

12個實驗室群與1個設計中心，打造套裝解題服務
Create abundant capacity and provide the various technology services by 12 laboratories & 1 design center

EMC＋環境測試(Reliability)＋疲勞耐久(Fatigue & durability)

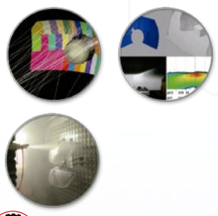
車電產品可透過整合服務，獲得從EMC對應，到針對機械、氣候、化學等負載耐受檢測以及壽命預估分析等。

Test program furnish quality consultation & laboratory verification to develop niche "Car-tronic" products.

光學設計分析測試(Lighting)＋電磁相容(EMC)＋環境測試(Reliability)

結合車輛燈光設計、環境測試、EMC等，搭配性能驗證改良，協助開發優勢產品。

Combine design/analysis of automotive lighting and verified facility to improve the product.



客戶特殊需求(Customer requirement)

實車碰撞(Crash)＋CAE

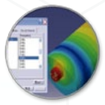
透過先進的CAE進行車體抗撞性及乘客傷害的碰撞模擬分析，再結合實車碰撞試驗來協助業者設計更安全、更具成本競爭力的車輛。

Simulation, analysis, verification of structure safety, pedestrian impact protection Speed up development efficiency by CAE of value added.

NVH＋CAE

利用CAE及振動噪音測試能量，執行模擬分析與評估，提供業界完整之振動噪音診斷與改善服務。

By using CAE stimulation to confirm mode & improve NVH Develop virtual design and evaluation.



疲耐(Fatigue & durability)＋試車場(PG)＋CAE

失效模型 (Failure mode) 的效能與結構分析，搭配疲勞耐久測試，可縮短業者研究時間。

Failure mode analysis on performance / structure Accelerated durability test to shorten research time.

推進國際合作，全球驗證布局
Provide the impetus for international cooperation and globalized certification service

與西班牙IDIADA、美國AMECA、澳洲DOTARS、德國TÜV、中東GSO、巴西IQA等機構建立產品驗證與技術合作關係，協助產業搶攻商機，帶動MIT 優質產品外銷全球。

透過國際指標組織交流，包含美國SAE、德國TÜV SUD、法國UTAC、俄羅斯NAMI、荷蘭TASS，同步掌握技術趨勢、厚植軟硬能力。

Cooperate with organizations such as AMECA in USA, DOTARS in Austria, TÜV in Germany, GSO in the Middle East and IDIADA in Spain, to promote the recognition and image of MIT products.

Through international indicators organizational communication, including SAE in USA,TÜV SUD in Germany, UTAC in France, NAMI in Russia, TASS in Holland to hold onto ongoing trend and automobile innovative technologies.

更多車輛中心詳盡介紹，請參考QR Code
More detailed descriptions of ARTC, please refer QR Code.