

 **北廠** 
見證
臺灣鐵道工業的
黃金年代
Taipei Railway Workshop

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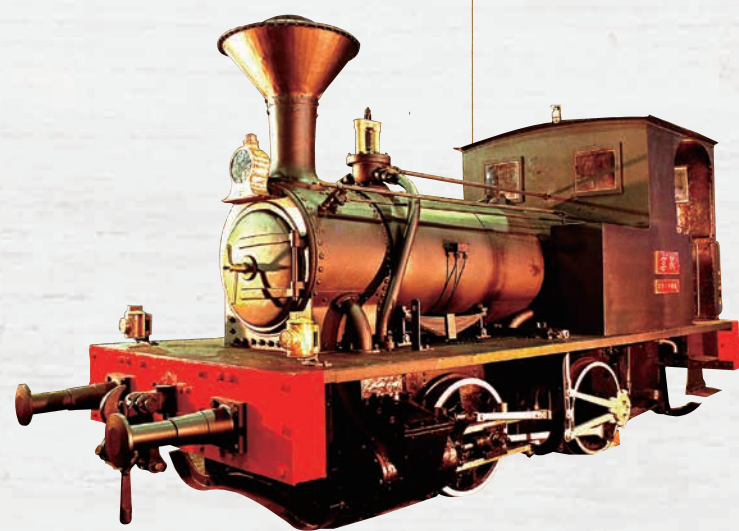
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局長序

帶領臺灣鐵路前進的火車頭——臺北機廠

座落於市民大道與基隆路之間的臺北機廠，可說是臺灣火車的原鄉，也是臺灣現存規模最大且歷史最悠久的鐵路車輛修理工廠。

臺灣鐵路與臺灣工業緊密不可切割，鐵路的設置不僅是帶動地方及產業發展的樞紐，而且對於城鄉發展及人口變遷有著重要的影響力。尤其鐵道運行的先決條件需要有「機廠」專門負責鐵路車輛的維修工作，所以臺北機廠不但是「火車醫院」，更是鐵路系統得以維持運作與技術提升的重要據點。

臺北機廠的歷史可追溯至19世紀清代末期的「臺北機器局」，它的位置大約在現今北門城外鄭州路和塔城街一帶，到了日據時期，隨著西部鐵路網的建構完成，原來基地面積不敷使用，因而在1928年擇定遷建於興雅庄（現松山區）並於1931年動工，當時號稱為東亞最大的鐵路機廠遷建計畫，於1935年完工啟用。

臺北機廠建置後，一直是臺灣鐵道產業重要的維修機廠，廠房設備除部分繼續使用清朝時期的機具，也包括二次戰後大陸機具設備遷入與在臺美援建設。主要業務最早為蒸汽機車的修護，隨著時代演進，逐漸改為電力機車、電聯車、柴電機車及客車車廂的保養與維修，有時也會進行車廂的改裝或改造，見證了臺灣鐵路的發展史。早年還曾經自己製造客車車廂，並出口到泰國；近年來更將退休的老蒸汽機車整修完成復駛，蔚為火車迷的佳話。廠區內的建築也記錄了臺灣工業化及鐵路運輸史的歷程，如：組立工場、鍛冶工場、客車工場等等，堪稱為工業建築的代表。

隨著運輸市場的變動與競爭，加上鐵路地下化的趨勢，以及臺灣高速鐵路營運路線與臺北機廠南北隧道的衝突，臺北機廠不得不搬遷至富岡車輛基地，舊廠的維修工作也正式走入歷史。2015年文化部將臺北機廠全區指定為國定古蹟，而廠內1889年製造的蒸汽動力錘更為重要瑰寶與古物的指標。逐漸淡出鐵路工業的臺北機廠松山舊廠，在80年後的今天，正擬以鐵道博物館方式重建人們的記憶。

從臺北市塔城街到松山，臺北機廠與臺灣的鐵路息息相關，它承接臺灣交通發展的使命，可說是鐵路的心臟與命脈。在歷經80年的勞動歷程中，臺北機廠舊廠房留下了勞動力與生產力的痕跡，呈現臺灣鐵路史獨特的工業美學，留下許多故事，也賦予外界各種不同的想像。它孕育了人們的火車經驗，反映了鐵道產業的發展過程，並記載著大家的回憶，從最初的興盛繁榮，到最後的功成身退。本專輯出刊之宗旨，即期能表達其中蘊含的鐵道內涵，讓座落於「48」的門牌號碼，不僅兼具四通八達的交通意涵，更能展現其豐厚的生命力。

臺灣鐵路管理局局長

廖澤身

Foreword by the Director General

The Locomotive of TRA Taipei Railway Workshop

The history of the railways in Taiwan is closely tied to that of industrial development. One of the most prominent examples of this is the Taipei Railway Workshop (TRW). The rails have driven local and industrial development, while also greatly affecting rural and urban development and demographic change. The “workshop” is critically important for it is responsible for the maintenance of rolling stock. Thus, the workshop is not only the “train hospital,” but also a vital infrastructure for the railway operation.

The Taiwan Railways Administration (TRA) established workshops in Taipei, Kaohsiung and Hualien. The one in Taipei is the largest in scale and has the longest history, and is the successor to the “Taipei Machinery Bureau” of the late Qing Dynasty near what today is Tacheng Street. The Taipei Machinery Bureau proved insufficient with the completion of the West Line rail network during the Japanese occupation. Thus, it was moved to Hsing Ya Chuang (Songsshan), the largest railway workshop relocation project in East Asia, which was completed in 1935.

Since its inception, the TRW has been an important maintenance workshop for Taiwan’s railways. From steam to diesel to electric engines, the TRW has witnessed the development of Taiwan’s railways, including incorporating machinery from mainland China after World War II and items provided by the US. The TRW buildings also have borne witness to the development of Taiwan’s railway industry, such as the Erecting Shop, Coach Shop and the Forge and Metallurgy Shop, thus serving as an emblematic industrial site.

Due to changes in the transportation market, the move to place the railway underground in urban areas, and the overlapping of the High Speed Rail line and the south and north tunnel of the TRW, the TRW was forced to move to Fugang, bringing to a close an historic career. In 2015, the Ministry of Culture designated the TRW as a national historic site. Key machines, such as the steam hammer made in 1889, were named national treasures. The TRW lives on today as a railway museum.

From Tacheng Street to Songsshan, the TRW has long played a role in Taiwan’s railways. The beating heart of the nation’s rail network, the TRW has kept the traces of labor and productivity, preserved a unique industrial aesthetic, and left behind many stories. The TRW is the beginning of people’s train ride experience, reflects the rise and fall of the railway industry, and harbors railway workers’ memories. This volume presents the TRW’s story, from beginning to end, hoping to express the TRW’s vitality and profound significance to the nation.

C. S. Lu



西元 1935 年興建的總辦公室，原本為單層建築，1966 年增建為二層樓，是整個機廠的行政中心
The general office constructed in 1935 was a one-story building. In 1966, another story was added, and it became the administration center for the TRW.



遷廠之前的臺北機廠正門外觀，門牌 48 號有四通八達之意
The general office of TRW before 2012. It's number 48 reflects the extending in all directions.

油漆工場及移車台（臺北機廠提供）
The railyard and Paint Shop.



開
創
先
機

Creating Opportunities

臺灣鐵路百餘年發展，
不僅是世界鐵道發展軌跡的一部分，
鐵路工業所帶來的交通運輸與時間守則，
更與臺灣的經濟起飛、庶民生活息息相關。

落成於1935年的臺北機廠，
有著「火車醫院」的美譽。
它見證了臺灣鐵路運輸最黃金年代，
一路伴隨走過日新月異的工業發展，
是臺灣鐵路史中不可磨滅的一頁。

A century since their founding,
Taiwan's railways represent part of global railway development.
But more than that, the sense of time and convenience created by the rails
are closely linked to Taiwan's economic boom and how people lead their lives.

Completed in 1935,
the Taiwan Railway Workshop is known as the "train hospital."
Having witnessed the golden years of Taiwan's rail transportation,
and experienced the ever-changing industrial development,
the TRW takes up a critical page in Taiwan's railway history.

臺灣鐵路的起始

Beginnings

臺灣鐵道的發展，最早可追溯至清朝。1885年首任臺灣巡撫劉銘傳抵臺後，深知鐵路對國防軍事及政治經濟發展的重要性，因而積極推動興建鐵路，經上奏朝廷「擬興修臺灣鐵路摺」後獲得支持，劉銘傳隨即發行鐵路股票募集資金，在臺北設立「全臺鐵路商務總局」，開始在臺灣興建鐵路。

興建鐵路並非易事，舉凡鋪設軌道、月台、架設涵橋及開鑿隧道等工作都需要專業技術，劉銘傳因而聘請英、德工程顧問，確定軌道行走路線。1887年6月9日，臺北至基隆的第一條鐵路開工，此為縱貫線的起始，後來劉銘傳又完成臺北至新竹的鐵路線。1893年，基隆至新竹全線通車，沿途設14個車站，全長106.7公里，這是臺灣鐵路興建的重要里程碑。

During the Qing Dynasty in 1885, the first governor of Taiwan Province, Liu Ming-chuan, came to Taiwan. Knowing the railways' importance to defense and economy, he founded the Bureau of Taiwan's Commercial Railway and started to build railways.

Liu Ming-chuan hired engineering consultants from the UK and Germany to plan the routes. On June 9, 1887, construction of the first railway, from Taipei to Keelung, was started. Liu oversaw the completion of the route from Taipei to Hsinchu. In 1893, the 106.7-km long railway from Keelung to Hsinchu, including 14 stops, was completed, a milestone in Taiwan's railway history.



臺灣首任巡撫劉銘傳與臺灣第一輛蒸汽火車騰雲號，這輛火車於1887年由德國霍亨索德機車廠製造，和臺灣鐵路有同樣的歷史歲數！騰雲號當時行駛於基隆和大稻埕之間，1895年加入縱貫線，於1924年退役後，存放於臺北市二二八紀念公園。1999年由臺北機廠整修完成，是現今世界僅存同型3輛蒸汽火車中，保存最好的一輛。

The steam locomotive Teng Yun, cast in Germany in 1887, was imported at the behest of Taiwan Provincial Governor Liu Ming-chuan. The train traveled between Keelung and Dadaocheng initially, being entered into main-line service in 1895. After being retired in 1924, it was housed at what is today 228 Memorial Peace Park in Taipei. The train was restored in 1999 at the Taipei Railway Workshop. It is the best-preserved of the three remaining steam locomotives in the world.



臺鐵第一代車票，錫口（今松山）與水返腳（今汐止）。當時臺灣巡撫劉銘傳經費拮据，因此將郵票暫作車票，以人工書寫的方式註明地點。

The first train tickets issued by the TRA, for a ride from Xikou (today's Songshan) to Shuifanjiao (today's Xizhi). A lack of funds forced Liu Ming-chuan to repurpose postage stamps as tickets, with station names being written on the tickets by hand.

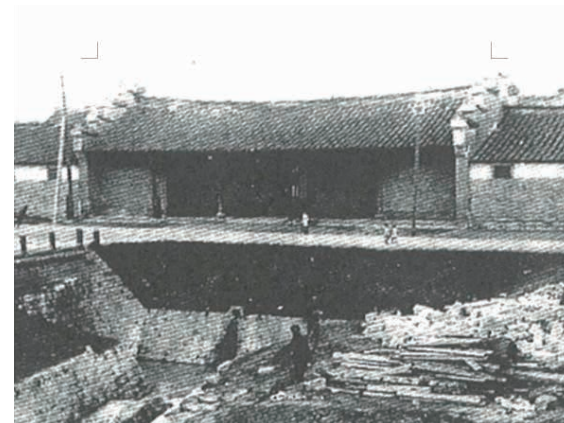
臺北機廠的前身 Forerunner of the Taipei Railway Workshop

早在1885年劉銘傳選擇大稻埕作為鐵路開工的起點時，他也在此興建了「臺灣機器局」，地點就位於今臺北市北門塔城街附近，主要業務為製造兵器和鐵路機器，兼鑄造貨幣、修理船舶等。

日本據臺之後，接收清軍撤退時尚未破壞之鐵路相關機具，1895年10月並將機器局改稱為「臨時臺北兵器修理所」，作為砲兵工廠使用。1899年「臺灣總督府鐵道部」成立，計畫全面興建臺灣西部縱貫鐵路，並借用砲兵工廠部份空間作為「車輛工廠」，之後又改稱為「臺北工場」，此即為「臺北機廠」之前身。

When Liu Ming-chuan chose Dadaocheng as the start for the railway construction in 1885, he also set up the "Taiwan Machinery Bureau" near Tacheng Street, close to the North Gate. Its function was to produce weaponry and railway machines, mint coins, and repair ships.

In 1895, Japanese troops entered the machinery bureau and took over the intact machines left by the Qing troops. In October 1895, the bureau was renamed the "Provisional Taipei Weaponry Repair Workshop." In 1899, the Railway Department of the General Governor of Taiwan was founded, under which plans were drawn up to build the West Coast Line. Parts of the weaponry workshop was made into a vehicle plant later renamed "Taipei Plant," the forerunner of the "Taipei Railway Workshop (TRW)."



劉銘傳設置的臺北機器局
The Taipei Machinery Bureau, instituted by Liu Ming-chuan.



日據時期的臺北工場
The Taipei Plant of the Japanese colonial period.

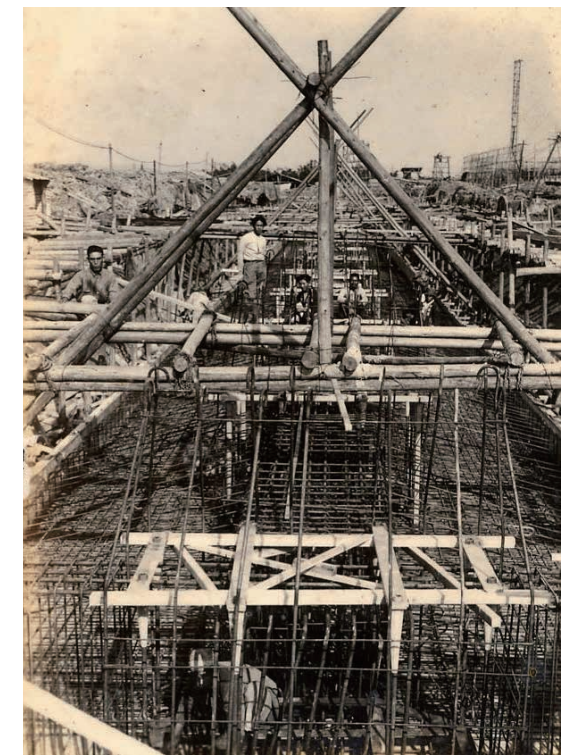
選址遷建興雅庄 Relocating to Hsing Ya Chuang

隨著鐵路興築進程延伸至全省，以及急速成長的鐵路運輸量，腹地有限的臺北工場，已無法滿足日漸增加的鐵路維修需求，考量機廠佔地面積大，而且不能與鐵路站體設施距離太遠，因此便選擇了位於臺北華山車站與松山車站間鐵路線上的興雅庄（今松山區），作為新廠的設置地點，而為了有別於舊廠，新廠也暫時命名為「新臺北鐵道工場」。

資深員工回憶，以前機廠周圍全都是田，也有很多沼澤低窪地。京華城以前是沼澤地，夏天還可以去抓魚，現在的華視、後山埤、松山機場等地，也都是沼澤地，下雨就會淹水，國父紀念館則是種水稻的田。這一帶都沒什麼房子，後來日本人從汐止樟樹灣地區挖了半個山的土來填這兒的地，然後才慢慢開發。

With the growing railway network and traffic, the Taipei Plant could not meet the rising demand for railway maintenance. As a workshop would take up a large space and could not be too far from stops, Hsing Ya Chuang (today's Songshan District) was chosen as the location for the new plant, which was named the "New Taipei Railways Workshop."

Senior employees recalled that the workshop was surrounded by the fields and wetlands. What today are a shopping mall, television network headquarters, Houshanpi area, and Songshan Airport were once wetlands, whereas Sun Yat-sen Memorial Hall was a rice paddy. The Japanese dug out half of a mountain in Xizhi to fill in the wetland here, allowing for development to proceed here.



從密密麻麻交織的松木樁與鋼筋，不難看出臺北機廠的地基有多穩固

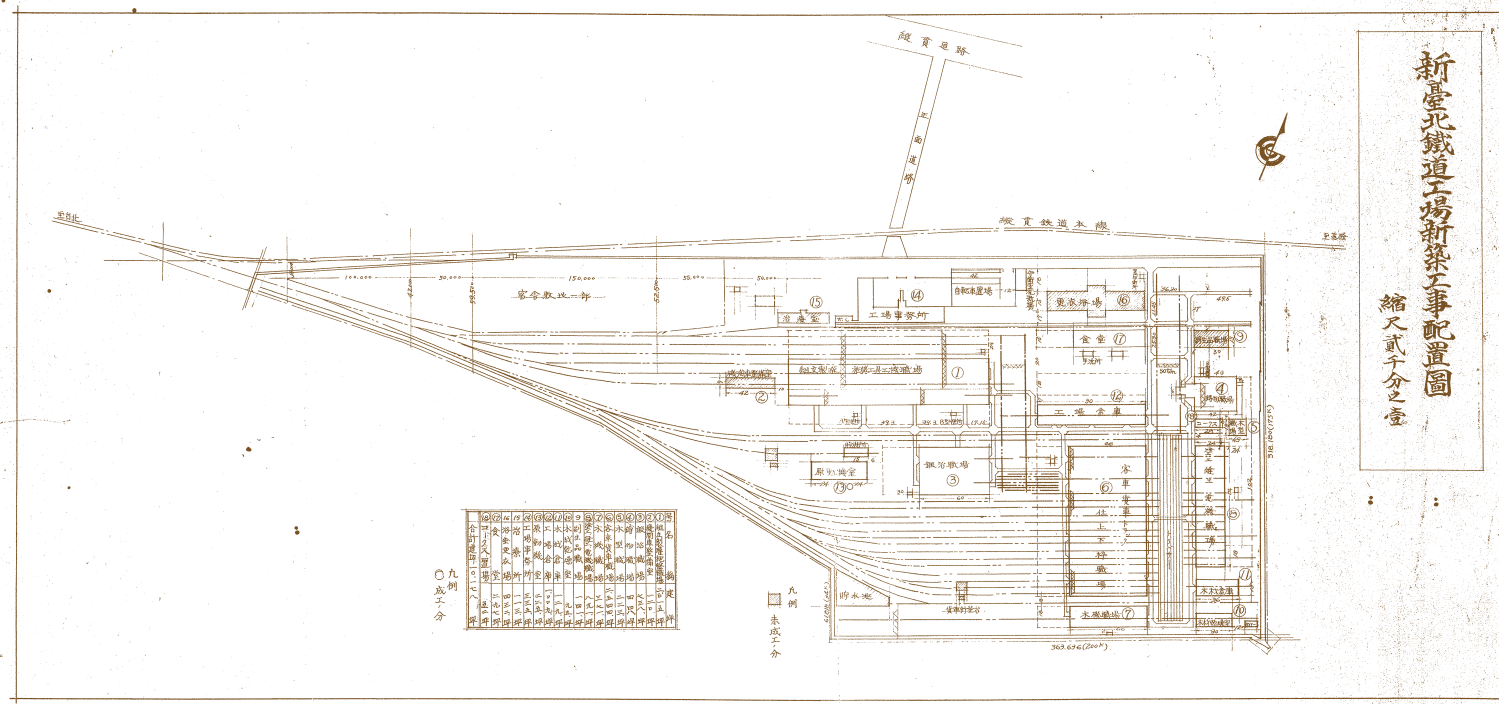
The interlacing pine and steel undergirdings shown in this picture hint at the great carrying capacity of the TRW's flooring.



建廠初期，工人正在進行廠房基礎作業
Workers prepare the ground for the TRW's construction.

東亞最大的鐵路機廠遷建計畫 East Asia's largest railway workshop relocation project

1931年，臺北工場的新建工程終於動工，廠房配置由日本鐵道工程師速水和彥所規劃設計，其規模之浩大，當時號稱是東亞最大的鐵路機廠遷建計畫。興建工程期長達4年，至1935年完工，全廠總面積為193,912平方公尺，廠房面積達57,200平方公尺，完工啟用之後定名為「臺北鐵道工場」，也成為全臺灣最具規模的鐵路車輛維修後勤中心。



日據時期所規劃的「新臺北鐵道工場新築工事配置圖」，從廠房配置圖即可見當時日本鐵道部對於火車的維修動線相當重視，規劃得非常縝密而流暢
Meticulous Japanese colonial-era plans for the Taipei Plant reveal the great importance attached by Japan to railroads.



建廠初期建築配置模型圖
An early scale model of the TRW.

臺北鐵道工場的基地略成梯形，基地的形狀到工廠建物的配置、構造及設備均經過審慎評估。廠區最特別的就是車輛入場路線，設計成漏斗型交角，有利車輛進廠維修；工廠建物也是依照入場路線配置，以短時間完成一輛機車入場標準作業為最大目標，大略可分為蒸汽機車維修區、客貨車維修區、輔助區、動力中心，共計有18座工場，當時重要的機車、客車維修養護幾乎均由這裡來主導。此外，還有煤炭置場、屑物置場、木材倉庫、木材乾燻室、氣罐室、變電所、事務所、治療所、更衣室浴場、食堂、倉庫等各種功能的建築。

除了大型工場之外，臺北鐵道工場也設立材料試驗所，進行各類維修材料之物理化學分析。「技工見習教習所」則專門培訓機廠的技術工人，扎實的訓練，使鐵道工場以技術精良而聞名，而火車維修工業的日見規模，也促使鐵路運輸更加蓬勃發展。

The construction of the Taipei Plant finally started in 1931. Railway engineer Hayami Kazuhiko designed the plant configuration. This was claimed as the largest railway workshop relocation project in East Asia. The four-year project ended in 1935, and the total area was 193,912 square meters, with 57,200 square meters of operating rooms. Renamed the "Taipei Railways Workshop," it was the largest rolling stock repair and logistic center in Taiwan.

The base of the TWR formed a trapezoid. The shape of the base, and the workshop's configuration, structure, and facilities were carefully designed. What stood out the most was the path for vehicles to enter the workshop as it was in the shape of a funnel, making maintenance easier. The workshop buildings were configured in accordance with the path, so as to reduce vehicle entry time. The workshop was divided into 18 workshops, including a steam locomotive maintenance area, coach maintenance area, supplementary area and motor center. The TRW was responsible for major train and coach maintenance. In addition, there were a coal depot, a remainder depot, a timber warehouse, a wood smoking chamber, a boiler room, a substation, an office, a clinic, a changing room and bathroom, a cafeteria, and a warehouse.

In addition to the large workshop, there was a technician apprenticeship center at the TRW. The solid training offered here made the TRW famous for its outstanding technique, and the growing train maintenance industry also drove the growth of railway transportation.

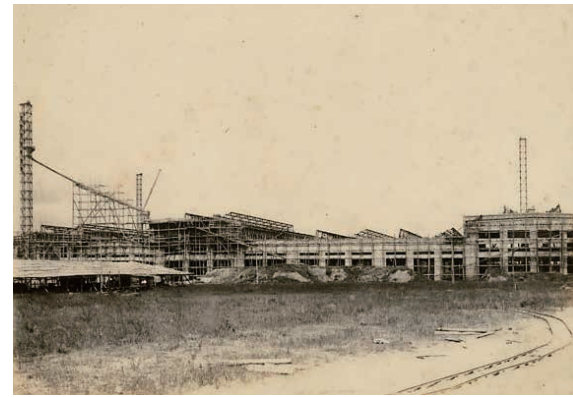
炸彈也轟不垮的廠房 Even bombs cannot keep the TRW down

臺北鐵道工場興建的工法技術，是比照當時日本國內鐵道工場的建築原則，以鋼筋高強度混凝土為材料，搭配大跨距的鋼製桁架，以達到堅固耐用之目的。

值得一提的是，許多作業廠房皆鋪設木煉瓦地坪。這是以檜木磚浸油之後，再以瀝青填縫鋪設而成，由於檜木磚比水泥和夯土有彈性，在機械載卸的過程中，才不致於承受不了重量而龜裂，還可以吸收重物落地的震力及油漬，既能防止地面或機械的損傷，也不會造成地面髒污，這項傳統工法至今還被老員工們所稱頌。

The TRW building itself incorporated Japanese architectural principles. Reinforced steel, high-strength concrete and long-span steel trusses were used to ensure strength and durability.

Most of the floors of the operating rooms were composed of wooden tiles, which were made of cypress soaked in oil with asphalt filling the gaps. The cypress tiles were more flexible than concrete and rammed earth, so they could withstand great weight and absorb shocks and grease, thereby preventing the floors from being damaged.



興建中的車輛場區，鋸齒形及陸形屋頂可以避免光影重疊及氣流擾亂
Careful construction ensures that sufficient light and air flow into the TRW.



鍛冶工場蒸氣錘基座安裝
The base for the steam hammer is installed at the forge and metallurgy shop.



車輛場區（左圖）及機器工場內部的鋼架結構，氣勢驚人，是當代工業建築的典範
The rolling stock area (left) and machine shop are both breathtaking in size, and were archetypes for their time.

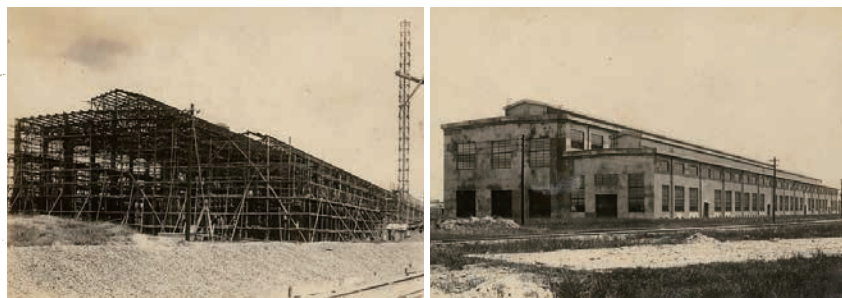


（左圖）油漆工場及移車台，維修好的車輛可直接由移車台送往工場油漆
（右圖）工場內的露天吊車，負責運送維修所需的原料
(Left) Repaired trains can proceed directly via the railyard to the Paint Shop.
(Right) This overhead crane brought in all the materials needed to conduct repairs.

此外，組立工場大跨距的鋼製桁架也不是採用現在常見的「焊接方式」，而是採用人工的「鉚釘樺接法」，以三人為一組，一人負責加熱鉚釘，當鉚釘尾端加熱完成後趁熱丟向第二人，第二人以鐵製錐形接物筒接住鉚釘，迅速以鐵鉗將它放置到樺接處穿過孔後以半圓孔錘壓住固定，而第三人手持氣動錘，同時將鉚釘，尾端錘打成形，逐一完成鋼架的鉚接。三人必須有絕佳的默契和技術，才能在一瞬間完成這個高難度動作。也因為這樣的工法，造就了堅固的組立工場，即便是二次大戰盟軍轟炸臺北時，組立工場被一顆500磅的炸彈攻擊，也只炸凹了屋頂，鋼骨架構仍屹立不搖。

Moreover, by using mortises and tenons rather than welding, the long-span steel trusses were connected by joining molten tenons and mortises before they got cold. This connecting method was completed by a group of three people. One was in charge of heating the tenon. When the end was heated, it was tossed to the second person, who caught the tenon with an iron cone, and connected it to the mortise, which was later fixed with a half-hole hammer. Then the third person used the air hammer to beat the tenon into the desired shape. In this way the mortises and tenons were connected one by one. The three people had to work in concert skillfully so as to complete this difficult task in a short time.

This method meant for a very sturdy building. When the Allied Powers bombed Taipei during WWII, the Erecting Shop was hit by a 500-pound bomb, but it only damaged the roof, and the steel structure remained intact.



興建中（左）及完工後的組立工場
The erecting shop during construction (left) and when completed (right).



完成鋼筋作業的廠房基座
Rebar is being installed.



完成混凝土作業的廠房基座
The reinforced concrete base is completed.

臺北機廠之父－速水和彥 Hayami Kazuhiko, father of the TRW



臺北機廠文物室中的速水和彥銅像及銘碑，現已存放於臺鐵富岡車輛基地
A bronze bust and plaque of Hayami Kazuhiko, now housed at the Fugang Vehicle Depot.

1889年出生於日本北海道釧路市的速水和彥，是臺北鐵道工廠（現臺北機廠）的設計師，8歲隨父親速水經憲來臺，中學時返回日本完成學業，1915年畢業於京都帝國大學工學部，之後返臺任職鐵道部，先後長達30年，終其一生奉獻臺灣，在臺灣鐵道史上佔有不可忽略的地位與功績。

速水和彥任內最重要的工作便是完成鐵道工場的遷建規劃，並以此作為火車的維修基地，致力於車輛機件的改良及鐵道人員的培訓工作，奠定技師扎實的維修基礎，造就臺灣許多重要工法的傳承與延續。為表彰其貢獻，工場落成時還曾於大門口設置銅像及銘碑。二次大戰後，速水和彥搭乘商船「日本丸」返日途中不幸病逝，這尊銅像也因為政治敏感而移走，甚至差點變成鑄鐵工場的原料，後來臺北機廠成立文物室，銅像及銘碑才有了安身之處。

Born in 1889 in Hokkaido, Hayami Kazuhiko was the architect of the Taipei Plant. At the tender age of eight, he moved to Taiwan with his father, returning to Japan for high school. He graduated from the Faculty of Engineering of Kyoto Imperial University in 1915, and returned to Taiwan to work at the Railway Department, where he remained for 30 years. He had played a pivotal role in Taiwan's railway development.

Under Hayami's watch, the major task was the removal of the workshop. Haymai was committed to improving machinery and training the personnel, thereby laying a solid foundation for technicians, and ensuring that hard-earned expertise was passed on. To recognize his achievements, a statute and monument were erected in front of the workshop. However, he passed away on the Nippon Maru on his way back to Japan, and the statute was later removed. The TRW has since established exhibit rooms to accommodate the statute and honor this remarkable man.



見證臺灣鐵道工業的黃金年代

車體鍍金整修作業 (邱家終攝影)
Sheet metal work on a car body.

承先啟後

Passing on Traditions

臺北機廠的火車維修史，
就是一部臺灣鐵路火車發展史。
從日據時期的蒸汽火車，
到民國五十年代的柴電機車，
六十年代鐵路電氣化之後，各式電力機車又陸續進入臺北機廠。
民國八十年代起，臺北機廠更修復多輛蒸汽火車，讓傳奇再現。
不論復古或革新，
承先啟後是不變的使命。

The TRW's train maintenance history mirrored Taiwan's train development history. The TRW has seen the era of steam locomotives during the Japanese occupation, that of diesel locomotives in the 1950s, and the introduction of even more trains by the TRW since electrification in the 1960s. Since the 1980s, the TRW has repaired steam locomotives so that these legends might live again. Old or new, the unchanging mission is to pass on the torch.

工業建築的典範－嚴謹又流暢的工作流程（1935-1945） A paragon of industrial building, and a stringent, smooth workflow (1935-1945)

臺北機廠設計之初，即是依據火車養護所需要的步驟來規劃不同的建築規格，也成為當代工業建築的典範之一。從車體進場至養護完成，均有一定的維修程序，並依據每個程序安排適當的工作編組，工作內容各有不同，也會安裝各式各樣的機具與設備。因為有這樣流暢又嚴謹的工作流程，臺北機廠內的各個建築與空間才能彼此串連，形成一個生動豐富的文化資源場域。

日據時期，臺北機廠的維修工人除了要躲避空襲，還必須盡可能維持正常運作，甚至需要利用夜間來工作，因此被稱為「維修的特攻隊」。大戰末期臺灣的鐵路運輸在盟軍強勢轟炸下仍能勉強維持，這群維修特攻隊功不可沒。

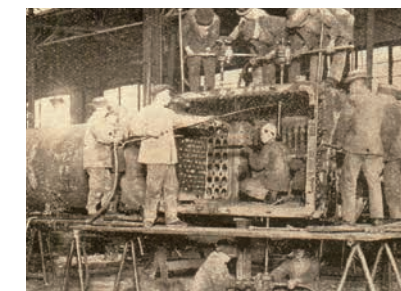
When the TRW was first designed, its architecture was based on the process of the train maintenance, and as a result, the TRW became an example for modern industrial building techniques. From entry to exit, the rolling stock had to undergo a specific maintenance procedure, and each element of this had its appropriate working group. Different tasks required different machinery and equipment. As a result of the stringent process implemented, different spaces and buildings in the TRW were interconnected and formed a dynamic arena of culture.

During 1935-1945, Maintenance workers not only had to avoid the air raid but also had to continue working, for which they became known as "maintenance commando," who made outstanding contributions to ensuring the railways' continued operation despite the bombings.

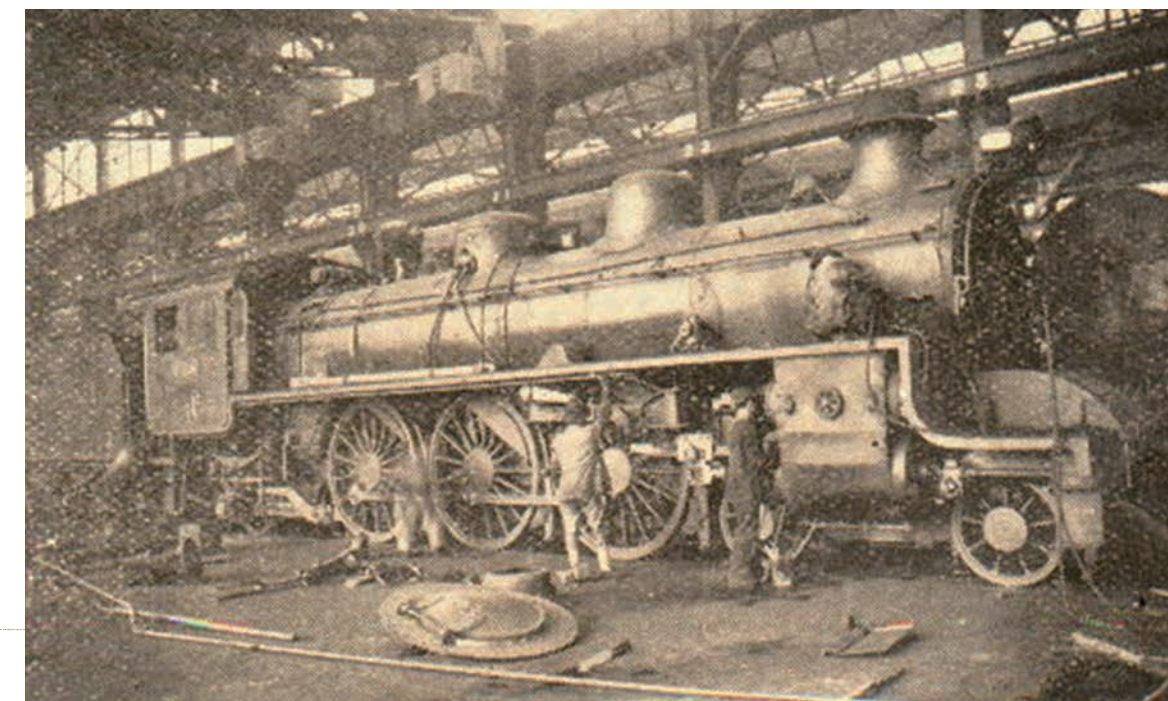
戰後接收時期（1945-1950）－蒸汽火車 Post-war handover (1945-1950) : steam locomotives

二次大戰後，臺灣鐵路飽受戰火洗禮，政府接收時滿目瘡痍，火車與鐵軌也由於缺乏零件而無法運轉，日本人還期期以為「臺灣鐵路維持不了三個月」，就在臺鐵員工不認輸的心態下，大家齊心修復，3個月後鋼軌上的輪子愈轉愈快，而臺北機廠也參與了這個重要的過程。

Taiwan's railways had been severely damaged by raids during World War II, and could not function properly due to a lack of component parts. The Japanese even said that Taiwan's railways could not continue to be operated for even three months following war's end. However, a collective effort by TRA employees meant that repairs were completed within three months, and the TRW played an important part in this heroic recovery process.



蒸汽機車煙管調整
A steam locomotive's blastpipe is adjusted.



蒸汽機車車輪拆卸
Wheels are removed from
a steam locomotive.

當時還是蒸汽火車的年代，機車頭從拆卸、維修到組裝、試車，共需要45日的修繕時間，舉凡機車上的配件，小至一顆螺絲釘，大至組件總成，皆可由各責任工場車削或製作木模來翻砂熔製，或鍛冶加工成為粗胚，再以機械加工成各種零組件，最後連油漆一氣呵成，完全不必假手他人。

This was still the day of the steam locomotives. It took 45 days to maintain a train at this time, from disassembly through maintenance through assembly through trials. The workshop did all of the necessary work, including molding and melting, forging and metallurgy, machine processing, and even painting.



工機工場、工具工場及機器工場進行機件維修作業
Parts are being repaired at the Tool Factory, Tool Shop and Machine Shop.



縫紉工場處理內部設備
A view of the Sewing Shop.



鑄鑄工場製作零件砂模鑄鑄工場製作零件砂模
At the Casting Shop, workers sand-cast parts.



油漆工場進行車廂補土及油漆作業
Workers paint a chassis at the Paint Shop.



蒸汽火車接手木模
Wooden coupler molds for a steam locomotive.



CK100 型用料木模
Wooden mold for a CK100 steam locomotive.

美援建設時期 (1950-1970) — 柴電機車

US assistance (1950-1970) : diesel-electric locomotives

1950年，由於韓戰爆發，美國基於共同安全對臺灣提供援助，臺北機廠即在此援助計畫中新建柴電工區與新車工場。柴電機車於1960年開始加入鐵路運輸行列，曾經是全臺灣最重要的鐵路機車，直到鐵路電氣化之後才漸漸被取代。

柴電機車是屬柴油動力，是靠機械力來產生電力，機械力動能產生的來源在於引擎，因此與引擎維修相關的工程為關鍵。柴電機車進廠後，先送至柴電工場，以大型吊車卸除機車外殼，將引擎、馬達等零件拆下送到所屬的工場進行維修，待維修完成後再回到柴電工場進行組裝測試。

In 1950, the Korean War broke out. For security reasons, the US provided assistance to Taiwan, such that the TRW could establish a new Diesel Electric Motive Power Division and a new coach workshop. Diesel-electric locomotives came into operation in 1960, and remained the mainstay of Taiwan's rolling stock until the railway electrification program was initiated.

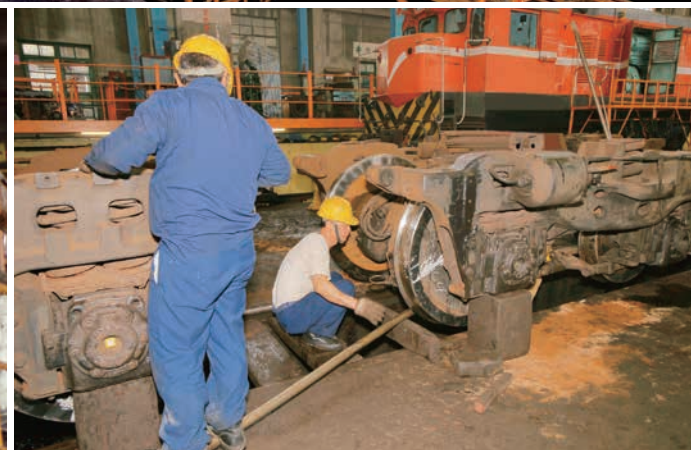
Diesel-electric locomotives were powered by diesel internal combustion engine which generated electricity to drive the traction motors. Therefore, engine maintenance was the most important element of rolling stock overhaul. When diesel-electric locomotives first entered the workshop, they were sent to the Diesel Electric Locomotive Shop to have their exterior removed, with the engines and motors being sent off for maintenance, and being returned to the Diesel-Electric Locomotive Shop for assembly and testing.



柴電工區內排滿了定期檢修的柴電機車。Trains await scheduled maintenance at the diesel power workshop.



柴電機車引擎主體維修作業
A diesel engine is being repaired.



柴電機車轉向架維修作業
A diesel locomotive's bogie is being repaired.

400 噸油壓機進行車輪拆卸作業
A 400-ton hydraulic press is used to remove a train's wheel.



柴電工區電機二場看板上的馬達維修流程表
Motor repair at the diesel power workshop of No. 2 Electric Shop.



柴電機車主發電機轉子整流子面鍍削作業
A diesel-electric locomotive's dynamo is being maintained. Motor assembly at the Electric Motive Power Division.

自製守車外銷

Manufactured new passenger cars for sale abroad

而在美援資助時期，臺北機廠還自行新造客車、貨車、電源車及煤斗車，1965年還曾生產100輛專用守車外銷泰國，這批守車非常有特色，前後都有瞭望台，兩側還有瞭望窗可以檢視列車運行狀態，由此也可見戰後臺灣工業水平的迅速發展。

While Taiwan was receiving US aid, the TRW manufactured new passenger cars, freight cars, power cars and coal hopper cars. In 1965, the TRW built 100 cabooses and sold them to a buyer in Thailand. These cars had balconies in the front and the back, and windows on both sides. This showed how far Taiwan's industrial development had advanced since war's end.



泰國守車車架電焊作業
Electric welding on caboose frames destined for Thailand.



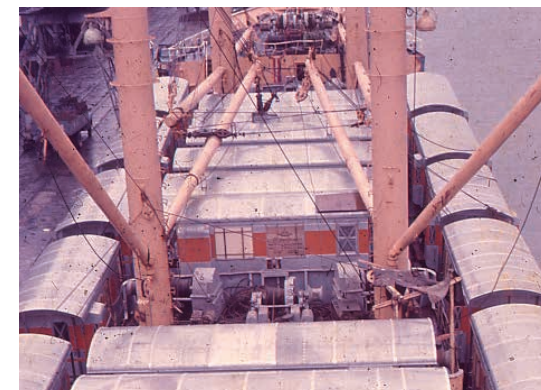
泰國守車據點製造
Manufacturing of cabooses destined for Thailand.



守車在新車工場外進行裝車待運作業
Cabooses are to be transported outside of the new coach workshop.



100 輛守車運往基隆港
100 cabooses were shipped to Keelung Port.



泰國守車裝船運往泰國
The ship loaded the cabooses departing for Thailand.



運抵泰國後進行試車
Cabooses undergo trial operations upon arriving.



守車內可見突出的瞭望窗
Observation windows in the cabooses.

國家經濟建設時期 (1971 至 2013) - 各式電力機車 National economic development (1971-2013) : electric locomotives

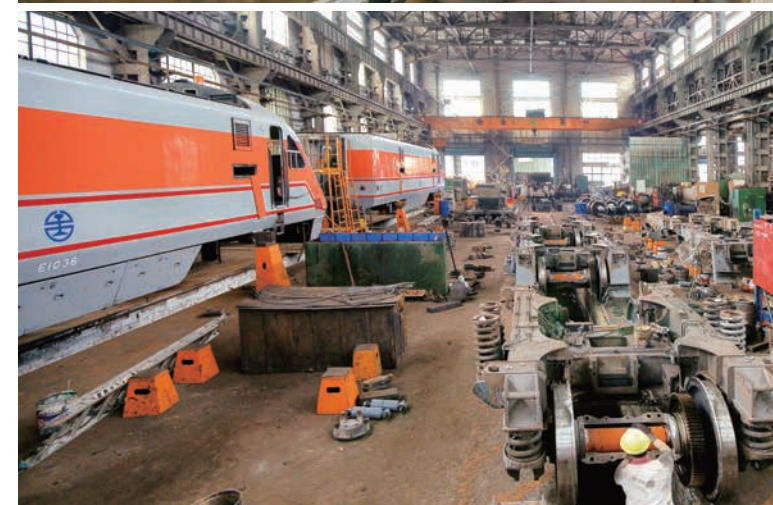
1972年，蔣經國擔任行政院長之後，開始推動十大建設，因此臺灣鐵路在柴電化之後，緊接著就在1975年推行鐵路電氣化的分期工程。臺北機廠也將原先的蒸汽機車工區重組為「電力場區」，並調整部份工場組織，以因應鐵道產業的變化。

In 1972, Premier Chiang Ching-kuo launched the Ten Major Construction Projects. Having adopted diesel-electric locomotives, the TRA launched a staging project for the railway electrification program in 1975. The TRW's steam locomotive area was transformed into the "Electric Motive Power Division." The organization was modified to meet these changes in the rail industry.

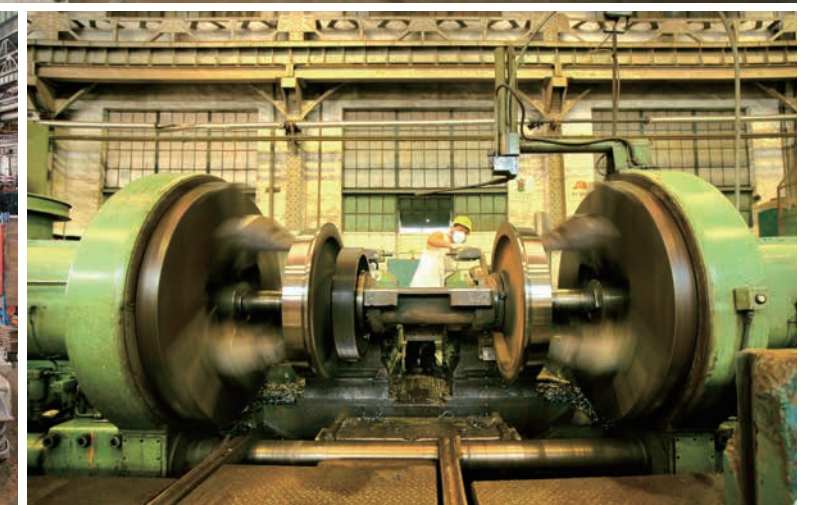
組立工場內各型電力機車 An assortment of electric locomotives at the Assembly Shop.



電力機車轉向架檢修作業
An electric locomotive's bogie is being repaired.



電力工區 PP 機車組裝馬達作業
A Push & Pull electric locomotive's motor is being repaired.



高速車輪車床進行車輪踏面鏤削工作
A lathe is being used to turn off a wheel.

電力機車是自1979年鐵路電氣化之後最新的車種，其維修主要在電力場區進行，其車種包括電力機車、自強號電聯車、通勤電車、推拉式電車組等。

E100型機車為臺鐵第一批引進的電力機車，1978年引進的EMU100型則是第一款電聯車，由英國GEC公司製造，造型時尚，被鐵道迷暱稱為「英國貴婦」，至今仍是五、六年級生懷舊的經典車型。

1996年首次引進的臺鐵推拉式自強號E1000，是臺灣第一款推拉式列車，俗稱PP車（Push-Pull, PP），取代自強號EMU100型。因為它是國內第一款流線型設計的列車，與當時的臺鐵電聯車迥異，因而有「蠶寶寶」暱稱。TEMU1000則是臺灣首款引進的傾斜式列車，2007年5月8日起以太魯閣自強號列車之名開始營運。

Electric locomotives were a new type of vehicle introduced after the railway electrification program was completed in 1979. Maintenance of related rolling stock, including the Tze-chiang Limited Express, EMUs, commuter trains, and push-pull trains.

The EMU100 was the TRA's first Electric Multiple Unit. Produced by the British company GEC and introduced in 1978. By 2009, the train was retired from service. The E1000, introduced in 1996, was the first push-pull train in Taiwan, and has been called both the "PP" and the "baby silkworm" for its streamlined design. The TEMU1000 was the first tilting train imported to Taiwan, and was officially put into service as the "Toroko Express" in 2007.



鐵軌草坪上的 EMU100 型電聯車高貴優雅姿態
The EMU100 are elegant on the rails.



E100 型電力機車為首次引進的電力機車車 / E100



推拉式 (PP) 機車是國內第一款流線型設計的列車，外型像蠶寶寶 / A Push & Pull electric locomotive



有紅斑馬自強號之稱的 EMU1200 型自強號 / EMU1200



EMU700 型電聯車，被鐵道迷暱稱為阿福號 / EMU 700



太魯閣號 TEMU1000 則是臺灣首款引進的傾斜式列車 / TEMU 1000



電力工區各工場集合早點名，廠長親臨精神講話鼓勵（邱家終攝影）
The head of the TRW holds roll call and gives a morning pep talk at the Electric Motive Power Division.

爐火純青

Tried and True Professionals

火車維修的技術與傳承，
是臺北機廠重要的貢獻。
從日據時期的「鐵道技工見習教習所」，
到光復後的「技工養成所」，
皆為鐵道技術人員的養成脈絡。

這些具備扎實技術的技術人員，
是臺北機廠的重要資產，
他們不但在國內外技能競賽中獲得佳績，
也撐起了臺灣鐵道工業的一片天。

The development and passing down of train maintenance techniques are major contributions made by the TRW. The "Technician Apprenticeship Center" dating to the Japanese colonial period and the later "Technician Incubation Center" were the "birthplace" of skilled railway technicians.

Well-trained technicians were the TRW's key asset. They not only won in competitions at home and abroad, but also served as pillars in Taiwan's railway industry.

臺北機廠的人才庫—技工養成所 The Technician Incubation Center--the TRW's talent pool

80年前，臺灣還沒有技職教育養成體系，因此臺北機廠維修火車所需要的大量人才，便只能由自己培訓。正式建廠3年後，以培訓技術人員為主的「鐵道技工見習教習所」於1938年成立，開始招收第1期學員，見習時間為2年6個月，一般簡稱為「教習所」。光復初期則改制為「臺北機廠技工養成所」，修業年限也延長為3年，簡稱「養成所」。無論是「教習所」或「養成所」，都肩負著鐵道技術人員的培育重任，而火車維修的技術與傳承，也成了臺北機廠的重要貢獻之一。

光復後的養成所學員，原本沿用日據時期教習所的教室，1959年因為改建柴電工區，養成所教室遷移至總辦公室旁。80年代，臺灣的公務人員考試已涵蓋了技術人員項目，機廠不需要再自行培育技術人員，於是1981年招收第29期學員後即終止招生，擁有43年歷史的技工養成所，也在這批學員畢業後正式畫上句點，閒置出來的教室則被規劃為文物室使用。

而在養成所南側的「材料試驗所」，則是臺鐵機務材料唯一檢驗單位，包括「物理室」和「化學室」檢驗範圍如金屬、橡皮、油漆、油料、電器材料等，嚴謹程度不下國家級檢驗標準。

Eighty years ago, with vocational education nonexistent in Taiwan, the TRW had to train its own talents for train maintenance. The "Technician Apprenticeship Center" was established in 1938 and the first students were recruited. Training was 30 months long, and after Taiwan was restored to the Republic of China, the center's name was changed to the "TRW Technician Incubation Center." The three-year training period then instituted was vital to the cultivation of railway technicians. The center has been instrumental in developing techniques and passing on traditions.

The members recruited after Taiwan's retrocession initially took classes in the classrooms created during the Japanese occupation period. In 1959, these classrooms were renovated into the Diesel Electric Motive Power Division, so classes were then held in the area next to the general office. In the 1980s, public service exams first included one for technicians, so the TRW no longer needed to train its own personnel. The 43-year old Technician Incubation Center was closed, and the empty classrooms are now used for exhibits.



1950年第三屆技工養成所畢業學員合影，背景是日據時期教習所教室，後來改建為柴電工區（資深員工沈友樵提供）

Group photo of the members of the 3rd class at the Technician Incubation Center in front of the classrooms built during the Japanese colonial period in 1950, which were renovated and became the Diesel Electric Motive Power Division. (Photo credit: Shen You-chao, senior employee.)



1969年第二十屆技工養成所畢業學員合影，背景是總辦公室（資深員工沈友樵提供）

Group photo of the members of the 20th class at the Technician Incubation Center in front of the General Office in 1969. (Photo credit: Shen You-chao, senior employee.)



現存技工養成所外觀
The Technician Incubation Center.

技工養成所的嚴謹課程 A tough curriculum

養成所的見習課程注重德育、智育、體育及臨場實習，規定學員必須全部住宿，對於集體生活習慣要求甚高，完全採取軍事化管理，難怪養成所畢業的資深員工回想起來覺得「比新兵訓練還苦！」

日據時期的教習所，教學方式採實習與理論兼備的方式，第一年以理論課程為主，第二年分科教育並到各工場實習。光復後則改為每週一、三、五上理論課程，二、四、六則實習，第一年學習鉗工等基本技術，第二年就到各工場學習油漆、烤漆、打鐵、車床、引擎等技術。而在學習期間，學員即可領取薪資，對臺灣早期經濟普遍不佳的一般民眾而言，頗具吸引力。

Apprenticeships focused on moral, intellectual, and physical education and onsite internships. Boarding was required, as if the members were in the military.

During the Japanese occupation, students studied theory in the first year, and took on their apprenticeship in the second year. After Taiwan's retrocession, the members studied theory on Monday, Wednesday and Friday, and did hand-on work on Tuesday, Thursday and Saturday. They learned such basic skills as bench work during the first year, and painting, metalworking, lathing and engine work in the second year. Students were paid when learning in the center and positions were coveted.



養成所招募學員正在進行智力測驗
New members are taking an IQ test.



養成所學員上課情形
Members seated in a classroom.



養成所學員在工場實習。
Technician Incubation Center members get hands-on experience.

得獎常勝軍 The Often Winner

養成所的學員畢業後都具備不錯的技術能力，經考核通過後便能成為機廠正式員工，分發至各單位服務，學員必須服務至少3年。養成所培訓出來的成員，是臺北機廠深厚技術水準的基礎。當時內政部舉辦全國技能競賽，臺北機廠好幾個組都得過前三名，像鉗工組、製圖組等，甚至還有代表出國比賽的工程師，如今臺鐵有許多資深主管即是來自當年的養成所。

After graduation, the students had a solid grounding in their craft. After passing an evaluation, they could become a TRW's employee and be assigned to different departments. They had to serve for at least three years. Individuals coming out of the incubation center have served in important posts, with many senior managers having spent time in the center.



養成所 21 期學員黃錫喜（右五）、彭永南（左四）及林連福（二排右二）參加第一屆及第三屆全國技能競賽得獎（資深員工沈友樵提供）

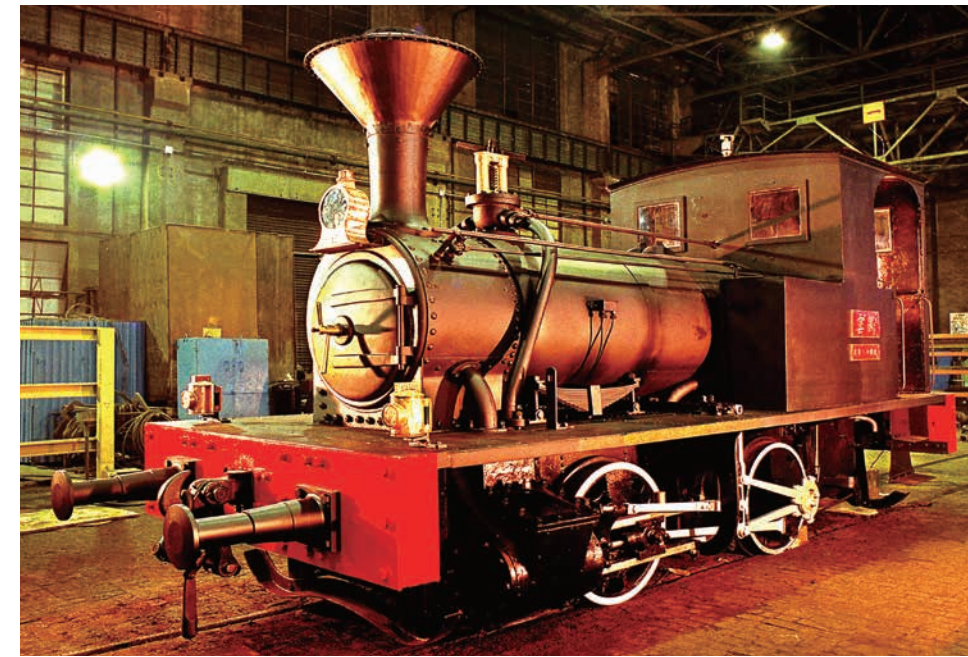
Members of the 21st class of the Technician Incubation Center Huang Hsi-hsi (fifth from right), Peng Yung-nan (fourth from left) and Lin Lien-fu (second row second from right) win awards at the first and third National Skills Competition. (Photo credit: Shen You-chao, senior employee.)

修復老蒸汽火車

Restoring steam locomotives

蒸汽機車自1979年鐵路電氣化之後即正式除役，從清朝末年臺灣鐵路興建開始，歷經80多年，大部分的蒸汽機車均已經報廢消失，僅剩小部分還保存下來。1997年起，臺北機廠配合臺灣鐵路局保存老舊機車的政策，重新整修了幾輛具有歷史意義的機車，計有CK101、CK124、DT668、CT273動態復駛，騰雲號古董火車考古整修，LDK58靜態展示整修，每一輛修復完竣均造成轟動，亦獲得社會大眾的共鳴與肯定。

Since the railway electrification program was being implemented, steam locomotives were officially decommissioned in 1979. They had been in operation since the Qing Dynasty for over 80 years and only a few remained. To preserve these old locomotives, the TRW has repaired several of them since 1997, including the CK101, CK124, LDK59, DT668 and CT273, the Teng Yun steam locomotives, and the LDK58 and LDT103. When repaired, these steam locomotives have proven popular tourist attractions.



騰雲號是臺灣鐵道史上所使用的第一輛蒸汽機車，光復後即將其評列為國寶級古董，因飽經歲月摧殘零件腐蝕殆盡，臺北機廠費盡千辛萬苦，從德國尋得文件資料作為復原之依據，經多方摸索考證及細心整修，這輛古董機車才於1999年恢復昔日風貌（攝影／邱家終）

The *Teng Yun* was the first steam locomotive imported to Taiwan. It has been listed as a National Treasure. Following an exhaustive search for blueprints in Germany and a painstaking restoration process, the train was returned to its original beauty in 1999. (Photo credit: Qiu Jia-zhong)



DT668 這款臺鐵最大型的蒸汽機車，有「蒸汽火車之王」美譽，擁有三項歷史紀錄：牽引力最大、噸位最重、最晚退休除役，它見證了臺灣經濟發展，2012年修復重駛別具意義（攝影／邱家終）

The DT668 is the largest steam locomotive ever run by the TRA, and is known as the "King of the Steam Locomotives." It is the heaviest and most powerful locomotive ever run by the TRA, and was the last of its kind to be retired. The engine stood as testament to Taiwan's economic development, and was restored in 2012. (Photo credit: Qiu Jia-zhong)

(左頁) 1917年誕生的CK101是第1輛整修並於1998年復駛的蒸汽機車，CK124於1936年引進臺灣，為集集線主力機車，於2001年修復
(left page) The CK101, built in 1917, was the first steam locomotive to be restored in 1998. The CK124, built in 1936, was the main locomotive used along the Jiji line. It was restored in 2001.

老蒸汽機車 CT273 修復實錄

The restored steam locomotive: CT273

2014年修復的CT273為大型客運車頭，動輪直徑為1750公厘，車身全長約20公尺，造型高雅，速度最快，所以有「蒸汽火車之后」的稱譽。原是西部幹線的客運主力，前後3年在臺北機廠及富岡車輛基地修復完成。

The CT273, restored in 2014, was a large steam locomotive for passenger cars and was known as the "Queen of the Steam locomotives". The steam locomotive has wheels of 1,750 mm diameter and a body length of 20 meters.

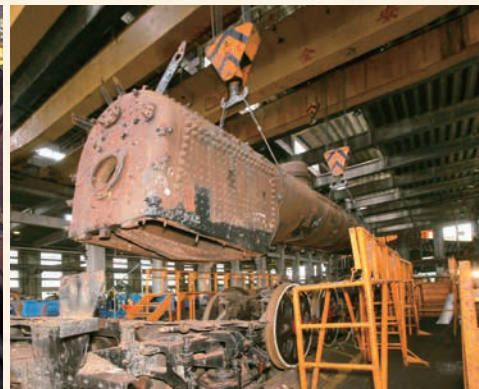
(文·攝影/邱家終
Photo credit: Qiu Jia-zhong)



CT273 整修前
CT273 before restoration.



CT273 煙箱拆卸
Removing the CT273's smokebox.



CT273 鍋爐吊掛作業
Hanging the CT273's boiler.



汽缸拆解
Removing the cylinder.



車架調整
Adjusting the train frame.



司機室整修
Restoring the driver's cabin.



蒸汽機車 CT273 於 2014 年修復之後，於彰化扇形車站首航
The CT273, restored in 2014, resumed driving from Chang'hua Roundhouse.

老局長老師傅 再造蒸汽火車 Old Director-General and Old hands Recreate the Steam locomotives

高齡80多歲的臺鐵前局長陳德沛和臺北機廠最經典的合作便是1998年催生臺灣第一輛蒸汽火車CK101復駛，後來又成功使已報廢除役的CK124再度飛馳。當時廠長陳明海與副廠長鄭萬經召集一群現職員工及退休老師傅，包括邱清泉、胡慶茂、莊永烜、黃金盛、劉肇梅、徐阿賢、劉樹根、莊培城、李克助、徐振龍、詹秋順、徐錦煥等，以及時任工作組組長蕭源盛、何獻霖、施工股長陳武昌、洪進興，克服萬難終於完成修復任務。有的退休師傅年事已高，又住在基隆和板橋等較遠的地方，時任工作組長何獻霖還親自上演「溫馨接送情」，照顧退休師傅無微不至，讓他們無後顧之憂，從事技術的指導與傳承。陳德沛局長退休後，蒸汽機車整修的腳步仍未停歇，陸續於2012年整修完成DT668，2014年整修完成CT273，也為這一連串「蒸汽機車復活」行動畫下最美的驚嘆號！

In 1998, an effort led by former TRA Director-General Chen De-pei and other old hands from the TRW resulted in the restoration of Taiwan's first steam locomotive, the CK101. The group also later refurbished the CK124.

Director-General Chen Ming-hai and Deputy Director-General Cheng Wan-ching organized a team of dozens of active and retired engineers, as well as working group section chief Hsiao Yuan-sheng and section head Chen Wu-chang during the restoration process. Thanks to their efforts, the CK101 was restored in just nine months.

After Director-General Chen De-pei retired, The restoration of a further five steam locomotives were still continuing. In 2014, restoration work was finally completed on the CT273, marking a happy ending to a romantic period of restoration efforts.



時任臺鐵局長陳德沛（左）與臺北機廠廠長陳明海一同為蒸汽機車復駛工作室揭幕
Chen De-pei (left) and Chen Ming-hai unveiled the studio of restoring steam locomotive.



（左起）時任局長周永暉、邱國松廠長、劉樹根及徐總工程師歡慶 CT273 掛牌復駛
Old hand Liu Shu-gen (second from right) celebrated the restoration work on the CT273 with chiefs.



CK101 維修功臣—退休副廠長鄭萬經
The hero of CK101 restoration: Deputy Director-General Cheng Wan-ching.

維修火車之外的巧思 Ingenuity abounds

臺北機廠的技術人員，除了早期製作火車零組件木模之外，最特別的是，廠內非維修用的零件也是自行製作，例如員工浴室的水龍頭、置物間掛勾等，歷經數十年仍可使用，可見品質相當優良。

孔明椅則是機廠員工結合藝術與技術的結晶，由鈹金工場的員工使用車輛零件集體創作而成，例如車輪是報廢的舊輪子，靠背下的骨架是車廂舊行李架上的白鐵管所改裝，最厲害的是椅背應用電聯車的不鏽鋼板，經過古董級的彎板機以純手工製作出舒適的弧度，最後噴砂方式烙上鐵路局的標誌，如果沒有精熟的鈹金技術，是做不出來的。

In addition to making wooden molds for train components, TRW technicians also forged other quality components, such as faucets and hooks which have been in use for decades.

The "Kong Ming Armchair," made of discarded wheels and stainless steel bars from old train luggage racks, is a combination of arts and craftsmanship. The most amazing part was the back of the chair, which was made of stainless steel sheets with a comfortable curve made by the bending machine. The TRA logo was sandblasted on the chair to add a finishing touch.



員工浴室中充滿古樸味的青銅製水龍頭，都是機廠員工自己翻砂打造的。它可以360度旋轉，只要開關和出水口呈90度就會自動止水，造型也比現代水龍頭厚重沈穩
The rustic bronze faucets in the employee's bathroom were cast by employees themselves. The faucets can be turned 360 degrees, and the water stops when it is turned 90 degrees from vertical. These faucets are sturdier than most of their modern counterparts.



以輪輻式車輪及電聯車不鏽鋼板製作的孔明椅
The "Kong Ming Armchair" was made from car wheels and stainless steel sheets from the EMU.

此外，廠區令人驚豔的機器人，也是由機廠一群「黑手藝術家」們親手創作的藝術品。所有機器人都是利用柴電機車及電聯車的報廢零組件接合而成，透過員工化腐朽為神奇的巧思，讓冰冷的金屬重新散發出裝置藝術的趣味。

最初設計機器人的員工們表示，當時覺得電影《綠野仙蹤》裡的機器人很像火車零件拼出來的，所以就畫了設計圖，用引擎活塞當頭，帶動汽缸套的連桿則組成四肢，用來循環空氣的送風機蓋變成盾牌，引擎廢零件組成鐵甲武士，在同仁協助除鏽、焊接、上漆後，1997年第一個機器人誕生。後來機廠又陸續做了十幾個機器人，在臺北車站、臺北市政府、彰化扇形車庫等風景區都可以看到，而且每座造型都不相同，相當受歡迎。

The first robot designers said that they thought the Tin Man from the movie "The Wizard of Oz" looked like it had been built of old train parts. Thus, they designed a robot with a cylindrical head, connecting bars as limbs, and a blower lid as a shield. Thus, the waste components formed a warrior. After cleaning, welding and painting, the first robot was completed in 1997. These robots can today be seen at Taipei Main Station, the Taipei City Government and the Changhua Roundhouse. Coming in different shapes and sizes, they are popular among visitors.



柴電工場技術助理葉時進正在焊接機器人作業 The robot is being welded by Technical Assistant Ye Shi-jin.



完工後的機器人 The completed robot.



第一代機器人有3公尺高，重約1,000公斤，主軀幹是柴電機車引擎的主軸承及汽缸套，手腳關節都可以活動，身體和頭也可以做180度旋轉，手上拿著「臺」和「北機」標誌的盾牌，以及用燃油管變成的長槍

The first-generation robot is three meters tall and weighs 1,000 kg. Its body is made of main bearings and cylinder liners. The joints are flexible, and the body and the head can be turned 180 degrees. The robot holds a shield bearing the marks of the TRA and TRW, and a spear made from a fuel pipe.



廠區內其他的機器人，也是利用不同的機車報廢零件所組成
Other robots at the workshop are made of discarded locomotive components.



文化傳承

Inheritance of Culture

為配合政府鐵路地下化及臺灣高速鐵路的興建，臺北機廠因而搬遷至桃園市楊梅區富岡車輛基地，臺北機廠松山舊廠的維修工作也正式走入歷史。2015年文化部將臺北機廠松山舊址全區指定為國定古蹟，擬以鐵道博物館的方式呈現，重建人們的記憶。

經過80年的勞動歷程，臺北機廠仍存有許多廠區及機械文物，留下了勞動力與生產力的痕跡，以及臺灣鐵路史獨特的工業建築美學，值得人們細細品味。

Due to the project to move the railway underground, and the creation of a high speed rail, the TRW was moved to Fugang, in Taoyuan County's Fugang, Yangmei District its maintenance work in Taipei's Songshan District came to an end. In 2015, the Ministry of Culture designated the TRW in Songshan District a national historic site, establishing a museum at which people could relive their memories of railway journeys.

Eighty years after its creation, the TRW in Songshan District was home to many shops and machines, on which are left the traces of labor and productivity. The unique railway industrial aesthetic is worth appreciating.

8北廠 見證臺灣鐵道工業的黃金年代

臺北機廠建築配置與規劃反映當時火車維修的一貫流程，為臺灣工業發展最重要與最完整的歷史現場，擁有許多無法複製的珍貴工業文化資產與地景。廠區大致分為4大工區、12個工場，其中組立工場、鍛冶工場、原動室及澡堂被指定為臺北市定古蹟，總辦公室、客車工場及柴電工場登錄為歷史建築。

The TRW's building configuration and planning reflected the strict procedures for train maintenance. It was an important venue for Taiwan's industrial development. The TRW can be divided into four areas and 12 workshops. The Erecting Shop, Forge and Metallurgy Shop, Engine Room and bathhouse were designated as Taipei City's historic sites, whereas the general office, Coach Shop and Diesel Electric Locomotive Shop were registered as historic buildings.

歷史建築
Historic
Buildings

總辦公室
General office

西元1935年興建的總辦公室，原本為單層建築，1966年增建為二層樓，是整個機廠的行政中心，整棟建物以拱形長廊串連，洗石子的立面與比例精準的拱型線結構，呈現出簡潔優美的建築風格，與機廠其它工業式建築形成有趣的對比，1966年增建的二層樓其長廊與一樓迥異，亦顯現出時代背景不同。

The general office constructed in 1935 was a one-story building. In 1966, another story was added, and it became the administration center for the TRW. The building's sections were connected by an arched hall. The stucco wash finish presented a simple, elegant arch line, forming a strong contrast with the rest of the industrial structure. The second floor and its hall, built in 1966, feature a different look to those downstairs.



總辦公室俯視全景
A panoramic shot of the General Office.



總辦公室一樓圓拱型長廊，古色古香

The arch hallway on the first floor of the General Office bears witness to its long history.



總辦公室正門
The main entrance of the General Office.

歷史建築
Historic
Buildings

柴電工場
Diesel Electric Locomotive Shop

為因應臺灣鐵道產業動力柴電化所需，臺北機廠於1962年興建「柴電機車維修中心」，即為現在的柴電工區，主要由柴電工場、內燃機工場、電機二場所組成，負責執行各型柴油電氣機車維修、拆卸與組裝，最多可容納7輛車同時檢修。柴電工場是臺灣第一座預鑄建築，場內的木煉瓦地坪為一大特色。

To meet growing demand for diesel trains, the TRW established a "diesel train maintenance center" in 1962, today called the "Diesel Electric Motive Power Division." Comprising the Diesel Electric Locomotive Shop, the Engine Shop, and the No. 2 Electric Shop, this center was in charge of the maintenance, disassembly and assembly of all types of diesel-electric locomotives. Seven vehicles could be repaired simultaneously. The Diesel Electric Locomotive Shop was Taiwan's first prefabricated building to feature wooden tile floors.



高壓熱水清洗引擎主體油污作業
Engines are steam-cleaned with pressurized hot water.



軟質木煉瓦地坪可避免維修零組件掉落地面造成損傷
Wooden tile floors can avoid damage components falling on the ground.

歷史建築
Historic
Buildings

客車工場 New Coach Shop

客車新車工場為鋼筋混凝土建築，屋頂採鋸齒型屋頂及特殊採光天窗，為當時流行的國際式樣建築外觀，也是客車工場的特色。主要業務為客車車體的製造及維修，客車車體（木製）及車廂內外的裝備，皆可百分之百自行製造。

客車新車工場目前置放1978年自英國引進的EMU100型電聯車組，這是臺鐵首款引進的電聯車，也就是我們所稱的「自強號」。由於此車型自英國引進，因而被鐵路愛好者暱稱為英國貴婦。

The New Coach Shop was built with reinforced concrete, a zig-zag roof and special roof windows. Its main function was to produce and maintain wooden coach bodies, and the exteriors and interiors of cars.

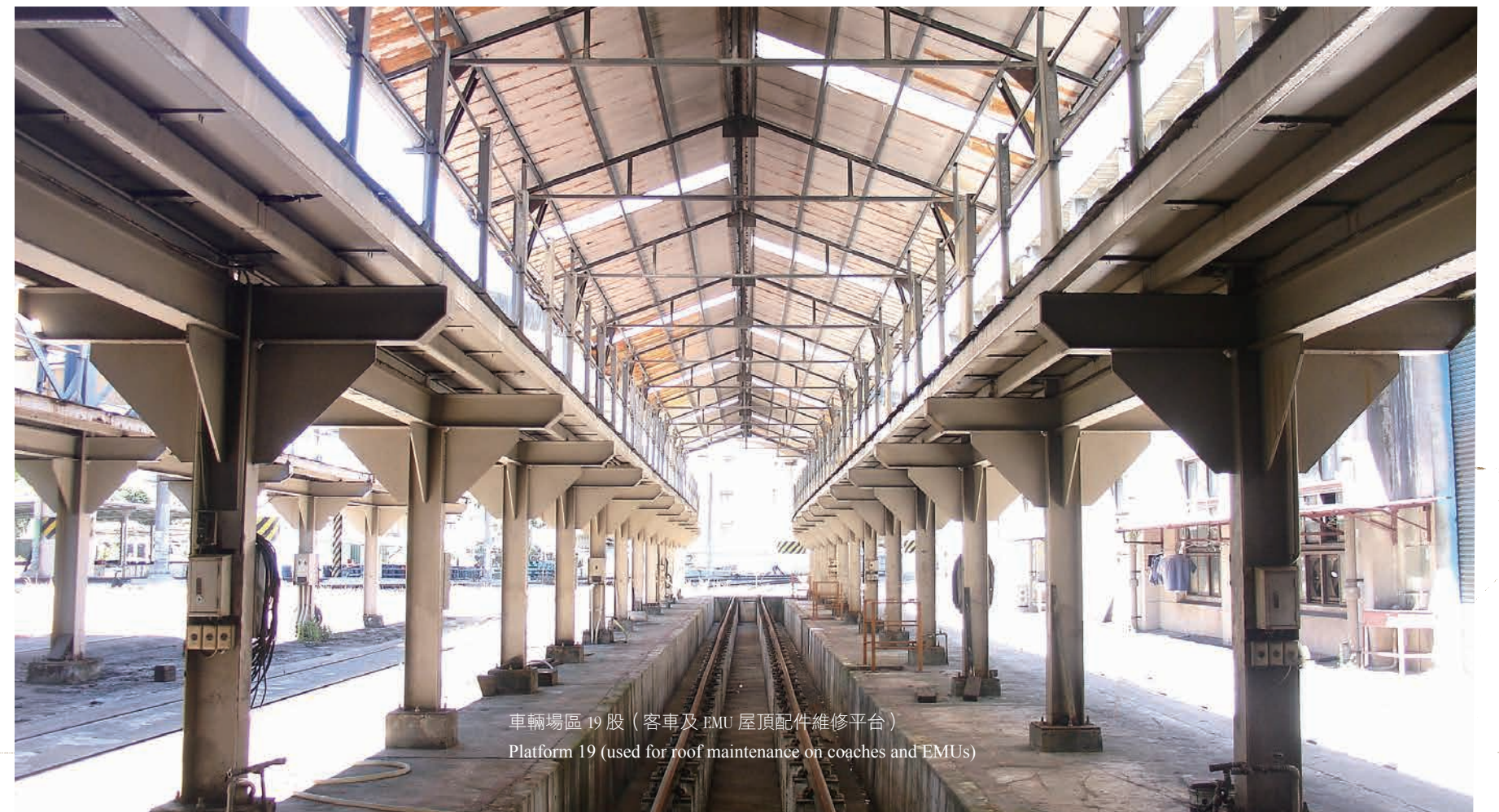
Currently, the EMU100 introduced in 1978 is housed in the Coach Shop. Known as the "Tze-chiang Limited Express," the EMU100 was imported from the UK, for which it got the nickname, "the British lady."



鋸齒型屋頂及移車台
The zig-zagged roof and
the railyard.



目前置放在臺北機廠內的 EMU100 型電聯車
The EMU100 are in the workshop.



車輛場區 19 股（客車及 EMU 屋頂配件維修平台）
Platform 19 (used for roof maintenance on coaches and EMUs)

市定古蹟
City historic site
組立工場
Erecting Shop

組立工場為機車車輛檢修時最先進入拆卸，亦為最終組裝出場試車的工場。廠房為長168公尺、寬28公尺之人工鉚接之挑高鋼結構，其23.8公尺大跨距鋼構、高20.4公尺的預鑄式屋頂、混凝土外牆的形式，呈現出工業建築中對稱、均勻、韻律、挑高及大面積開窗等特色，是早期工廠建築的先驅與指標性建築。

組立工場早期為蒸汽機車維修工區，後來主要作為電力機車、電聯車的維修廠房，並支援柴電機車車輪鏟削工作，以及全廠特殊或一般常用零件之機器加工，是臺北機廠內相當具有歷史意義的建築之一。

組立工場部份空間曾在1944年遭盟軍轟炸攻擊，但僅在東南角屋頂炸出一個洞，隨後加以修復，目前工場內部結構仍維持日據後期之形式風格。

The Erecting Shop was where cars were assembled and disassembled. At 23.8-meters long and 20.4 meters high, and featuring concrete walls, with 168 meters long and 28 meters wide structure the workshop is symmetrical, and was in its time a groundbreaking industrial structure.

The Erecting Shop was first the steam locomotive maintenance area, and later was used to maintain electric locomotives and EMUs, wheel lathing, and processing of special and standard components. It was a building of great significance.

Part of the Erecting Shop was bombed by the Allied Forces in 1944, creating a hole in the southeast corner that was later repaired. The internal structure still reflects a post-Japanese occupation style.



組立工場鋼架上密密麻麻的鉚釘，都是以嵌入熱擊法鉚接，因此十分堅固
Steel frames at the Erecting Shop are studded with rivets, which are tempered for strength.



組立工場為機車最先拆卸，亦為最終組裝出場試車的工場
The Erecting Shop was where cars were assembled and disassembled.



組立工場以兩部吊車同時吊掛電力機車作業
Two gantry cranes are used to simultaneously put together electric locomotives at the Erecting Shop.

市定古蹟
City historic site

鍛冶工場 Forge and Metallurgy Shop

鍛冶工場裡有臺北機廠內年代最久遠的機具設備，目前仍保有日據時期從鐵道部移設至此的重機械，如清代1889年劉銘傳時代的蒸氣錘，亦不乏大型的起重機械及電氣吊車，難能可貴的是這些已逾百歲的機械目前仍可運作。

在蒸汽火車的時代，鍛冶工場負責鍛件製造、鋼件熱處理及彈簧修製試驗等工作，後來因動力電力化的演進，鍛冶工場內的製造業務亦隨之縮編，如今工場牆壁上還看得到「克難增產」大字，不難看出當年的盛況。

The Forge and Metallurgy Shop housed the oldest machines in the TRW, such as the steam hammer dating back in 1889, and large cranes and an electrical crane that still work to this day.

In the era of the steam locomotive, the Forge and Metallurgy Shop was responsible for forging, steel heat treatment, and spring testing. With the launch of the electrification program, the workload of this workshop shrank. The words "increasing production despite hardships" can still be found on the wall of the workshop.



鍛冶工場現存及當年的機器設備
Machinery used at the Forge and Metallurgy Shop

1889年由英國 Barack Raph Co 製造的蒸氣錘，於1900年購入，1949年國民政府遷臺後，由廣州運至臺北機廠，時任臺鐵局長周永暉特別講述這段歷史
A steam hammer dating to 1889.



兩噸門型蒸氣錘古今對照 The two-ton door-type steam hammer, both past (left) and present.



鍛件加熱作業
Heating parts at the forge.

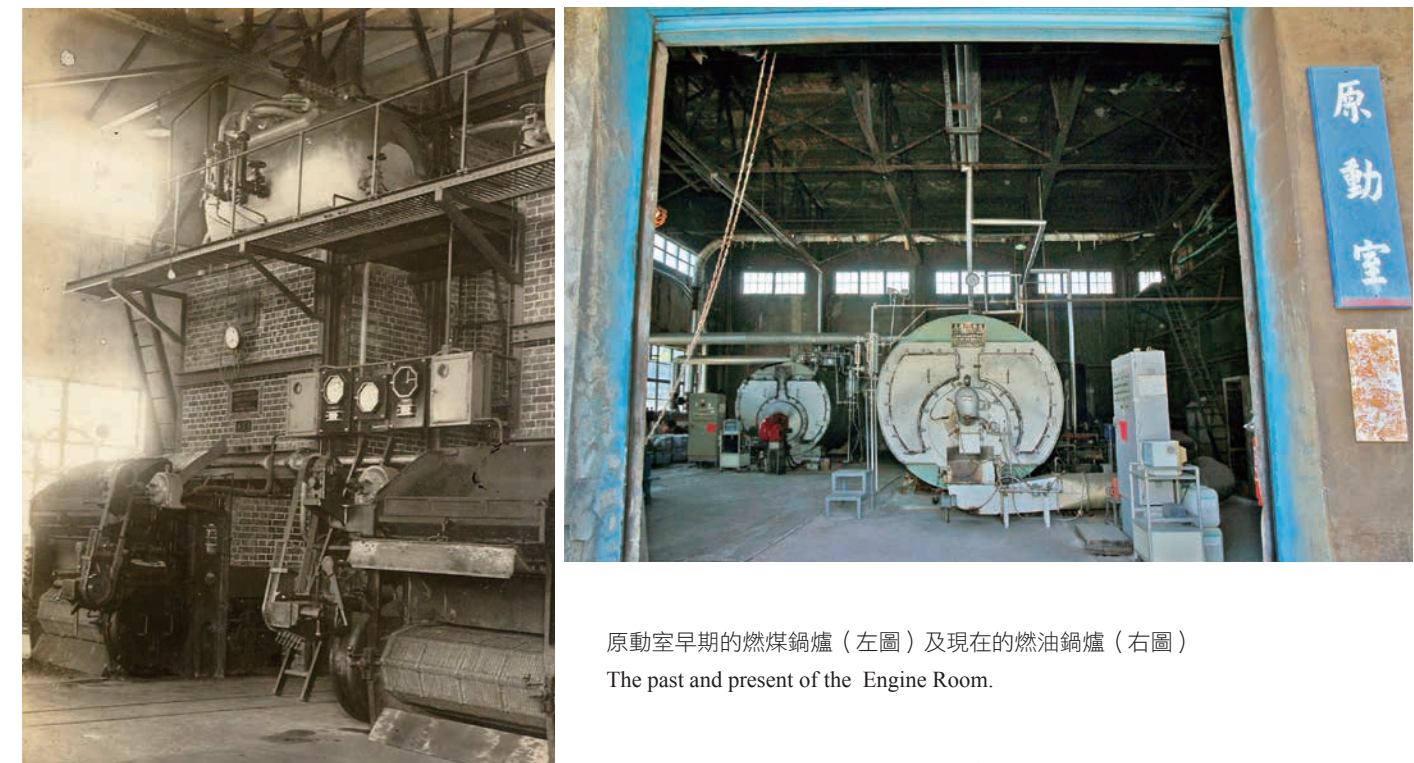


以蒸汽錘鍛造零件作業
Using the steam hammer to mold a part.

市定古蹟
City historic site
原動室
Engine Room

原動室在日據時期稱為「原動機室」，內部包含鍋爐室、空壓機房及電力室，它就像臺北機廠的心臟，藉由遍布全廠的空氣管路，提供廠區內各工場主要動力來源，是廠區的主要動力核心。而原動室旁高達45公尺的大煙囪，則是臺北機廠的主要地標。

The Engine Room, which included the boiler room, the air compressor room and the power room, was like the TRW's heart. The air pipes all around could provide power to the whole workshop. The 45-meter chimney next to the Engine Room was the TRW's major landmark.



原動室早期的燃煤鍋爐（左圖）及現在的燃油鍋爐（右圖）
The past and present of the Engine Room.

市定古蹟
City historic
site

員工澡堂 Employee Bathhouse

員工澡堂建造於西元1935年，由於維修蒸氣火車相當容易沾染碳污，設計者速水和彥於建廠同時即建造一處公共浴室供員工使用。原動室鍋爐提供高壓蒸氣驅動各工場機具後，其餘熱經由蒸氣管導入澡堂中的大形浴池加熱，此除了資源再利用的環保新觀念外，也是機廠重視勞工需求的具體表現。

澡堂結構採用洗石子外牆、拱型鑄鐵屋頂、圓形山牆的開窗及老虎窗，充分展現當時日本融和歐洲建築風格之特色；主要空間分別為更衣室、淋浴區、浴場，延續了日本公共澡堂的空間特色，並塑造了一個交談休憩的空間。獨特的空間造型，更吸引周杰倫電影《天臺》作為拍攝場地。



屋頂拱型鑄鐵是澡堂一大特色 (攝影/邱家終)

The cast iron arch roof is a memorable characteristic of the bathhouse. (Photo credit: Qiu Jia-zhong)

repairing steam locomotives, so architect Hayami Kazuhiko built a public bathhouse for the employees. The water was heated by the steam discharged from the Engine Room. This was an early example of respect for recycling, and of the respect the TRW had for its employees.

The bathhouse consisted of a stucco wash finish wall, cast iron arch roof, round gable window and dormers, which showed the Japanese and European architectural features. The main area was the changing room, shower area, and the bath, which could be used for conversation and leisure. The movie "The Rooftop," directed by Jay Chou, was filmed here.



員工澡堂的更衣室

The changing room in the employee bathhouse.



早期的員工澡堂 (左側) 及大禮堂及食堂 (右側)
The employee bathhouse (left) and cafeteria (right).



早期員工浴池內景

A view inside the employee bathhouse.

附錄 臺北機廠相關大事年表

Appendix Taipei Railway Workshop Chronology

西元年
Year

大事記
Chronology



- 1885 ● 臺北機器局開始興工。
Construction of the Taipei Machinery Bureau begins.
- 1887 ● 劉銘傳開辦鐵路，清廷分別向德國及英國訂購蒸氣機關車。
Taiwan Governor Liu Ming-chuan begins to build railways; the Qing government orders steam locomotives from Germany and the UK.
- 1895 ● 甲午戰爭，臺灣割讓給日本。
First Sino-Japanese War occurs, as one result of which Taiwan is ceded to Japan.
 - 陸軍接收臺北機器局，改稱為「臨時臺北兵器修理所」。
The Japanese army takes over the Taipei Machinery Bureau and renames it the "Provisional Taipei Weaponry Repair Workshop."
- 1896 ● 陸軍撤除臨時臺北兵器修理所，原址設臺北砲兵工場。
The Provisional Taipei Weaponry Repair Workshop is renamed the Taipei Artillery Factory by the Japanese army.
- 1900 ● 臺北砲兵工場正式交接轉由鐵道部使用，稱為臺北工場，即為臺北機廠的前身。
The Taipei Artillery Factory is handed over to the Railway Department and rechristened Taipei Plant, the forerunner of the Taipei Railway Workshop (TRW).
- 1926 ● 臺北工場改稱為臺北鐵道工場。
Taipei Plant renamed the "Taipei Railway Workshop."
- 1929 ● 決議擇臺北市外松山驛附近之土地作為臺北新鐵道工場移轉之預定地。
Land near Songshan in Taipei City chosen as the new home of the TRW.

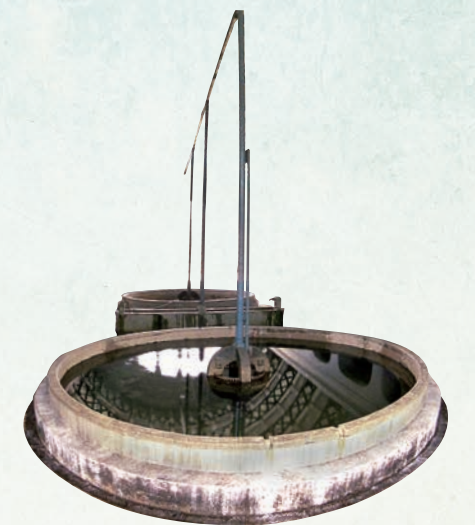


- 1934 ● 「臺北新鐵道工場」竣工。
New Taipei Railway Workshop completed.
- 1935 ● 10月舉行「臺北新鐵道工場」移轉工事之竣工儀式。
New Taipei Railway Workshop completion ceremony is held in October.
- 1937 ● 太平洋戰爭爆發。
Second Sino-Japanese War breaks out.
- 1938 ● 10月1日舉行臺北鐵道工場內第一期之「鐵道技工見習教習所」始業式。
Orientation for the first class at the technicians' apprenticeship center is held on October 1 at the TRW.
- 1944 ● 10月12日臺北鐵道工場受砲彈攻擊，車件工場、組立工場等受損。
On October 12, the TRW is bombed, damaging the Erecting Shop.
- 1945 ● 日本戰敗投降，國民政府正式接收。
Japan surrenders to the Allies; the Republic of China takes over the TRW.
- 1946 ● 「鐵道技工見習教習所」正式改稱為「技工養成所」。
Technician's apprenticeship center rechristened the technician incubation center.
 - 進行臺北機廠之相關接收事項。
TRW handover continues.
- 1947 ● 臺北機廠正式招收第一屆技工養成所學工。
TRW recruits its first group of technicians for the incubation center.
- 1950 ● 臺北機廠開設「臺語訓練班」。
TRW starts offering training classes in Southern Min.
- 1951 ● 美國開始實施對臺經濟與軍事援助。
US economic and military assistance to Taiwan begins.
- 1952 ● 臺北機廠自1948至1952年間，利用日治時期舊廢車輛，改造貨車119輛。
From 1948 to 1952, the TRW renovates 119 discarded freight cars dating to the Japanese colonial period.
 - 臺北機廠利用日治時期所存之舊材，製造15噸篷車50輛、10噸篷車15輛。
The TRW employs materials dating from the Japanese colonial period to manufacture 50 15-ton cover cars and 15 10-ton cover cars.
- 1954 ● 組立工場廠房增建工程。
Erecting Shop expanded.



- 1955 ● 縫紉工場新建工程。
Construction of Sewing Shop begins.
- 臺北機廠申請化學實驗室設備。
TRW applies for equipment for a chemical laboratory.
- 1959 ● 為因應興建柴電工區之需，拆除日據時期技工養成所舊木造建物。
Wooden buildings housing the incubation center dating to the Japanese colonial period are torn down to make way for a Diesel Electric Motive Power Division.
- 增建新車工場。
New passenger car workshop built.
- 1962 ● 增建柴電機車工場。
Diesel Electric Locomotive Shop built.
- 1963 ● 臺北機廠改隸臺灣鐵路管理局。
TRW placed under the jurisdiction of the Taiwan Railways Administration (TRA).
- 1965 ● 受理泰國鐵路公司 100 部守車之外銷訂單。
TRW receives an export order from Thailand for 100 cabooses.
- 1966 ● 總辦公室二樓增建工程。
Second floor of the general office built.
- 臺灣鐵路管理局訂購首批柴電動力機車 43 輛，由美國運抵基隆港。
TRA purchases 43 diesel-electric locomotives from the US, which were transported via Keelung Port.
- 1970 ● 增建鑄鋼工場。
Foundry shop built.
- 1979 ● 西部幹線電化工程全線通車，全面停駛蒸汽機車。
Western Line electrification project completed; steam locomotives decommissioned.
- 完成西部鐵路幹線電氣化後，臺北機廠亦完成技術轉換變革。
Technological transformation completed at the TRW.
- 1980 ● 北迴鐵路正式通車。
North-Link Line enters service.
- 1981 ● 第 29 期臺北機廠技工養成所結業，不再辦理招生。
The 29th and last class at the technician incubation center graduates.
- 1991 ● 東西向快速道路跨越臺北機廠軌道改善工程。
East-West Expressway spans the TRW as part of an infrastructure improvement project.

- 1992 ● 南迴鐵路正式營運。
South-Link Line enters service.
- 1997 ● 「蒸汽火車復駛」計畫：尋找老師傅指導員工，計畫修復蒸汽機車 CK101 及 CK124。
“Steam Locomotives Restoration Project”: restoration of the CK101 and CK124 begins.
- 1998 ● 臺北機廠原技工養成所教室整修為「文物室」。
Classrooms in TRW renovated as exhibit rooms.
- 完成 CK101 蒸汽機車復駛，懷舊之旅由臺北站行駛至基隆站，進駐彰化扇形車庫。
CK101 restored and recommissioned. Its nostalgic maiden voyage took it from Taipei Station to Keelung Station and finally to Changhua Roundhouse.
- 1999 ● 與臺灣博物館共同主辦「騰雲號回娘家活動」，將騰雲號搬遷至臺北機廠修復竣工。
Homecoming for the Teng Yun Steam Locomotive is held; the locomotive is moved to the TRW for repair.
- 2000 ● 臺北市政府正式登錄臺北機廠之「員工澡堂」為市定古蹟。
Taipei City Government designates the TRW's employee bathhouse as a municipal historic site.
- LDK58 蒸汽機車運回臺北機廠修復竣工，現展示於臺北車站。
LDK58 steam locomotive delivered to the TRW for repair; today it is exhibited at Taipei Main Station.
- 2001 ● CK124 蒸汽機車由臺北機廠整修完成並點火啟用。
CK124 steam locomotive restored by the TRW and officially re-entered into service.
- 2009 ● 臺北機廠遷建設計畫：富岡基地舉行動土典禮。
Groundbreaking at Fugang held for the new home of the TRW.
- 2012 ● 臺北機廠執行斷軌。
TRW in Taipei's Songshan District disconnected from the rail network.
- DT668 蒸汽機車修復啟用。
DT668 steam locomotive restored and entered into service.
- 2013 ● 富岡車輛基地廠房搬遷作業完成。
TRW Fugang relocation project completed.
- 2014 ● CT273 蒸汽機車修復啟用。
CT273 steam locomotive restored and entered into service.
- 2015 ● 舉辦「臺北機廠建廠 80 週年」活動。
TRW's 80th anniversary celebration held.
- 文化部將臺北機廠全區指定為國定古蹟。
Ministry of Culture designates the TRW a national historic site.



蒸汽火車的修復，代表著鐵路文化的復興；
柴電機器人的打造，代表著鐵路工藝的創新；
擁有輝煌歷史的臺北機廠，正展望新的未來。

北廠 80，意味的不是鐵路黃金時代的結束，
而是另一個鐵道文化傳承的開始。

80 Years of the Taipei Railway Workshop is not the end of the golden years
of the railway, but rather the start of the railway cultural heritage.





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