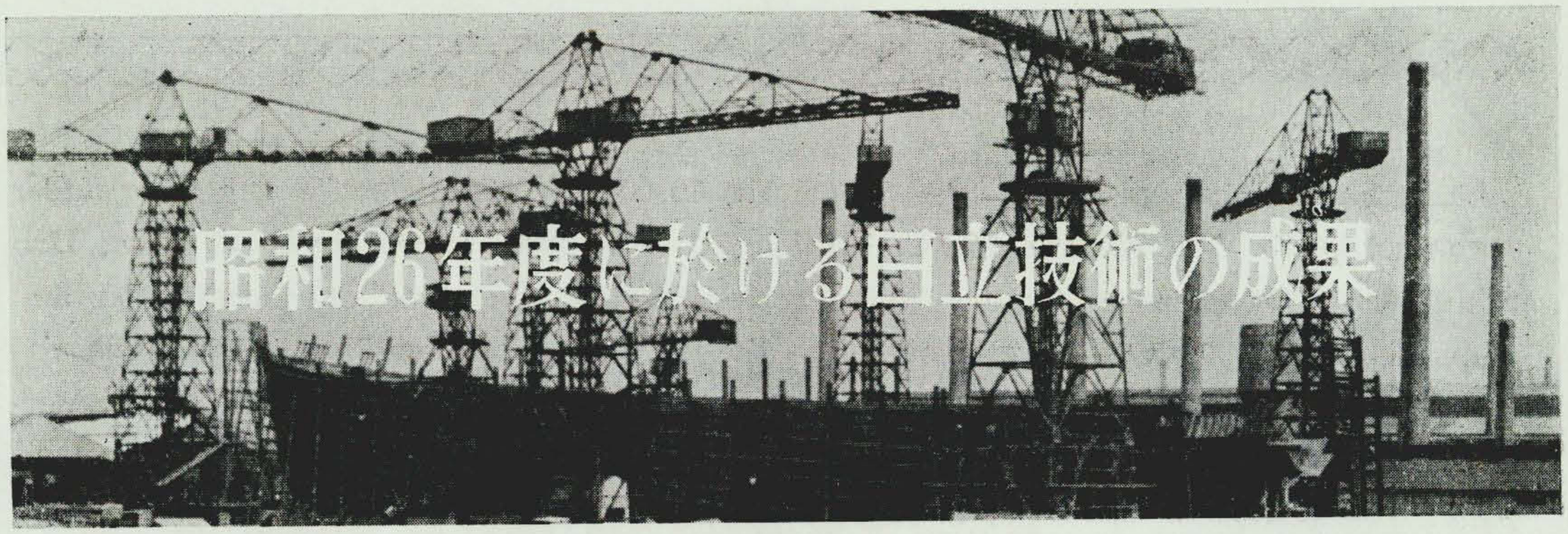


昭和26年度に於ける日立技術の成果

1951 : A RECORD OF PROGRESS

The year 1951 witnessed the initial operation or the completion of manufacture of the large number of heavy machinery and equipment ordered during the previous year in line with the plan for industrial rehabilitation ; this alone would have accounted for the expansion of our research and production facilities to a level approaching that of pre-war years, but the decision in the second half of the year to bring into execution huge electric development projects in view of the nationwide power shortage, caused a sudden surge in the activity of the Company to a point exceeding the pre-war level.

Full measures were taken to cope with the situation, both technically and quantitatively, not only in regard to power generating machinery alone but also in respect to construction and transportation machinery, side by side with provisions for the manufacture of materials in our forging and casting plants. We are happy to be able to say that actual operating results have shown that domestically produced equipment has been fully equal to the task of supplying the necessary installations.

The 275 kV New Hokuriku Main Power Line, taken over by the Kansai Power Co. from the former Japan Power Generation and Transmission Corp. and completed in the year 1951, was the foremost accomplishment in the electric power field in recent years, and all respect is due to the efforts of those who took a direct part in its completion. The rapid advance of technical skill shown by the manufacturers of the equipment used in this system also deserves critical attention. Our Company was given the work of manufacturing a portion of the machinery and equipment, including a 70,000 kVA main transformer, and it is noteworthy that the equipment was made and delivered after passing the tests with excellent results.

More than ten hydroelectric generator sets were produced during the year, including two sets of 23,000 kW Francis Hydraulic Turbines for the Numazawanuma Generating Station. Three sets of Francis Hydraulic Turbines for the Escaba Power Station in Argentina were shipped out in good order after having passed the inspection of the user's representative, and although not especially important in respect to capacity, attracted widegpread attention at a time when the export of plant equipment remains at a low level.

In regard to Thermal Power Equipment, the 10,000 kW turbo-electric generator under manufacture for the Madras Power Station in India was tested under exacting BSS Standards in the presence of the user's representative, and was duly completed and shipped. Another notable development was the receipt of a combined order from the Tokyo Electric Power Co. for a 55,000 kW turbine, a 67,000 kVA hydrogen cooled generator, and a 150-ton boiler, comprising one unit which had been projected by that company. The receipt of this order believed to have been a result of the continued improvement of our manufacturing technique, and the united effort of the Hitachi organization is now being directed the designing and manufacture of this equipment.

The 5,000 HP Blooming and Rolling Mill Motor which had been under production for the Yahata Iron Works was delivered according to schedule in 1951, and has been in successful operation since the end of that year as the first Ilgner set to be made after the end of the war.

The Power Transmission and Transformer Equipment for thr U. S. Army in Okinawa was completed during the year, having been made in exact accordance with American standards both in respect to materials and inspection methods. They were the first metal-clad open air equipment made in this country, and were safely delivered by ship to destination.

A large number of transporting and cargo handling equipment was produced, including overhead travelling cranes for power stations, machine shops, and steel yards, incorporeting numerous technical improvements. A bridge crane with a handling capacity of 300 tons per hour and a load capacity of 22 tons was supplied to the Hirohata Iron Works ; this crane is a record product in respect to capacity and size, having a total girder length of 108 meters and a height of 31 meters. Especially noteworth among the year's products were cable cranes. Since making the first cable crane in this country in 1935, the Company undertook a progressive study and was able, on the basis of extensive oxperience, to secure for itself a position of the foremost importance. Numerous units were completed in response to the demand from various users in sizes up to 18 tons and 6 cubic meters capacity, while work is proceeding on other units.

Several winding machines also were made, including a 1,000 HP unit for the Tagawa Mine of the Mitsui Mining Co. The unit for the Tagawa Mine utilizes a HT Dynamo and is made for program operation but is also epuipped with an automatic operating device, representing a further step in technical development.

Although no compressors and blowers of exceptional size or capacity were made, a very large number were supplied in the standard sizes. Special progress was made in the study of gases, leading to clarification of problems relating to corrosion resistance of vane and shaft materials, which have further increased the reliability of these products.

The 21,000 kW Turbine Pump for the Numazawanuma Power Station finally entered the manufacturing stage, following on the conclusion of tests on the model. It is expected that the pump will soon be ready for actual operation.

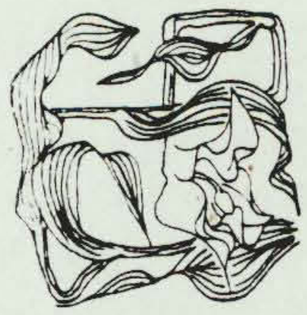
In the sphere of rolling stock, a large number of electric locomotives, electric cars, street cars, passenger coaches and freight cars were made, including Type EF 15 locomotives for the Japanese National Railways. Several important technical improvements were introduced, such as the development of vibration free trucks and the utilization of MMC motor operated controllers for small electric cars and surface traction cars, which were viewed as an exceptionally hopeful contribution for the promotion of export trade.

Turning to the field of communications, the Company has extended its activities from conventional wire system equipment to the manufacture of carrier systems, while in respect to wireless apparatus it has completed a 150 MC frequency modulated radiotelephone unit which has been supplied to the police force as well as other with extremely satisfactory results.

In regard to stock items centering on general purpose motors and pole transformers, the Company has expanded into the home appliance field by producing electric home refrigerators, electric fans, washing machines, etc., which have met with a very encouraging consumer reaction.

In the field of insulating materials, the improvement made in Class B insulation has been especially remarkable, while substantial progress has also been made in the study of Type H insulation with silicon resins. Numerous new fields of application were found for vinyl, the recently introduced insulating material for electric wire, and it has been used successfully used for the interior wiring of switchboards as well as for general purpose cables and communication cables.

It is our intention to outline the collective results in this issue for the information of the reader, and it is hoped that in doing so we will contribute in some small measure to the development of Japanese industry.



緒　　言

INTRODUCTION

昭和 26 年度は昨年度に於ける産業復興の線に沿つた大量の重機器の製品が運転に入り、或は又製作を完了し、日立製作所に於ける研究並に生産態勢も又着々戦前のレベルに近付いたが、下半期に到つて電力不足の声に応じた尨大な電源開発の計画が実施に移されるに及んでその態勢は急速に戦前以上に上昇して来た。

単に発電機器部門のみならず建設用機器或は運搬用機器製作部門より、鍛造鋳造等の原料工場に到る迄、技術的にも又量的にもこの対策に万全の処置がとられ、国内の設備は国内の製品で十分消化し得る事を実績を以て立証しつつある。

本年度、旧日本発送電より関西電力に継承されて完成された 275 kV 新北陸送電幹線は最近の電力界に於ける最大の成果で、建設に直接当られた方々の努力に深甚の敬意を払わなければならない。又その機器の製作を担当した製作者の技術の飛躍は瞠目すべきものがあり、日立製作所に於ても 70,000 kVA 主変圧器以下その設備の一部を製作担当し、優秀な成績で納入し得た事は特筆に値する。

水車発電機としては沼沢沼揚水発電所用 23,000 kW フランシス水車及び発電機二組以下十数台完成されたが、その内アンゼルチンエスカバ発電所用 9,000kW フランシス水車発電機三組は容量としては大きなものではないが輸出向として立会検査も無事修了し完全に船積出荷された事は、プラント輸出不振の折柄斯界の注目を浴びている。

又火力発電設備として先に印度マドラ発電所用として製作中の 10,000 kW タービン発電機がこれ亦厳重な BSS 規格に依る立会検査を全部完了して出荷され、又東京電力で計画された 55,000 kW タービン並に 67,000kVA 水素冷却発電機 150 ton ボイラーが一括日立製作所に発注 された事は技術の研鑽が結実したものとして特筆に値いし、現在総力をあげてその設計製作が進められている。

昨年来鋭意製作中の八幡製鉄所用 5,000HP 分塊圧延用ミルモータは予定通り本年納入され、旧臘終戦後本邦始めてのイルグナーセットとして順調に運転に入つた。

米軍沖縄島送変電設備も本年製作完了し米国規格に依つた材料並に検査で完璧に製作され、屋外用メタルクラツドとして本邦の処女製品が無事海を渡つた。

運搬荷役用機器として、天井走行起重機は発電所用、一般機械工場用、製鋼用等多数のものが製作され、多くの技術的改良がなされた。又橋型起重機として広畑製鉄所用の 300 ton 毎時、22 ton 荷重のものは桁全長 108 m 全高 31 m に達し、能力及び大きさに於ける記録品である。本年度特記すべきものにケーブルクレーンがある。日立製作所に於ては昭和十年本邦最初のものを製作してより、技術的研究と幾多の経験を積み追随を許さぬ地歩を確立し、18 ton 6 m³ 以下各方面の要望に応じて多数製作完了し、又製作中である。

巻揚機としては三井鉱山田川鉱業所用 1,000 HP 以下数台納入された。田川鉱業所用のものは、HT ダイナモを利用したプログラム運転を行うもので又自動運転装置を備えており、技術的に一進歩を劃したものである。

圧縮機、ブロワは特記すべきものはなかつたが、標準品が多量に製作された。特にガスに対する材料の研究が積まれ羽根材、軸材等の耐蝕性の問題が十分究明され信頼性が更に増加した。

沼沢沼揚水発電所用 21,000 kW タービンポンプはその模型に依る研究を完了し、本体の製作に着手され、世期の揚水を開始するのも間近となつた。

車輛関係に於ては国鉄 EF 15 型電気機関車の他、多数の電気機関車、電車、客貨車が製作され、技術的にも防震台車の実用化 MMC 電動制御式コントローラーの小型或は路面電車迄の適用等、進歩の目覚ましいものがあり、又海外輸出のホープとして重視されている。

通信関係に於ては従来の有線機器より更に搬送装置に進出し、無線機としては 150MC 周波数変調式無線電話装置を完成して、警察その他の方面に好評を博している。

汎用電動機、柱上変圧器を主体とする商品関係では、更に家庭用電気品迄進出し、電気冷蔵庫、電気扇、電気洗濯機等好評を博した。

絶縁材料として B 級絶縁の改良進歩は目覚ましいものがあり、更に硅素樹脂系の H 種絶縁に関する研究は着々と進められている。電線の最近の新しい絶縁物として現われたビニールは益々その応用が広められ、配電盤の裏面配線等はもとより、その制御ケーブルより通信ケーブル迄広く使用されるに到つた。

これ等の総合成果をこゝに御紹介し、江湖の御批判を仰ぐと共に日本産業の発展に些さかなりとも寄与する所あらば甚だ幸である。