

MARITIME TECHNICAL EDUCATION IN SZCZECIN AT THE BEGINNING OF THE 20TH CENTURY

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Abstract: The maritime technical educational system in Szczecin at the beginning of 20th century has been presented in the paper. Main reasons for demand increase on the highly-qualified maritime technical personnel in contemporary Szczecin and foundation of the first high school in Szczecin - Hoehere Maschinenbauschule zu Stettin was described. The structure of the academy school and its laboratory equipment for research of contemporary ship drive solutions and ship equipment were presented. Next, the reasons for the degradation of the maritime educational system between two wars period was described. The further development of the technical laboratory base in the described period was presented.

Keywords: maritime educational system, Szczecin, technical laboratory base, 20th century.

Introduction

The location of Stettin in the estuary of Oder to Baltic predisposed the city as a very important sea trading centre and seaport. From 10th century Stettin was a place wherein the marine industry played a dominant role. Here marine ships were built and marine equipment was produced. For the development of this branch of industry there was a constant need for the new advanced specialists for navigation, as well as, for building and repairs of ships. Through centuries the educating process of new maritime specialists took place on the ground of practices in craft guilds, workshops and at recognized professionals and directly on ship decks on the basis of many years of practicing. This way of education was very ineffective. The invention of the steam-engine and implementing it into the drive of ships resulted in the demand increase on educated technicians, steam engine drivers and specialists in the marine equipment service. Already in 1830 the first School of Ship Construction – Schiffsbauerschule was founded [5]. It was situated in the district Stettin – Grabowo, next door to ship workshops. In 1861 the school was transferred to Berlin where, after the connection with Craftsman's Academy (Gewerbe

Akademie), it became one of the first academic institutions in the German capital. In 1856 one of the biggest marine shipyards in Europe of that time was established

in Szczecin-Der Stettiner Maschinenbau Gesellschaft Vulcan [1, 2, 3] (Fig. 1). After 1871 it was a constant order winner for the navy battleships - Reichsmarine.

It enforced the development and big changes in the local marine educational system. In 1873 one of the first unions of mechanical specialists was established - Verein der Schiffmaschinen zu Stettin (called Stettiner the Klub von 1873). The development of Szczecin's shipyards caused constantly growing request on highly qualified marine workers and engineering staff. Existing educational system did not keep up with this. Bringing new qualified workers from other cities like Hamburg, Lubeck, Bremen was no longer sufficient. It became necessary to create a new marine educational system in Szczecin and open schools which would educate their students in general technical issues of a ship profile, and especially in the marine engineering. A remarkable event took place in 1898, in Szczecin, where the Emperor of Germany Wilhelm II published a new German strategy "Our Future stands on the water" („Unserer Zukunft Liegt auf dem Wasser") [5]. That year Szczecin's

shipyard Vulcan is visited by the new famous general manager Robert Zimmermann [1]. He starts building luxurious transatlantics in the shipyard for two biggest German ship owners: Nordeutscher Lloyd from Bremen and Hapag from Hamburg. They won the title of the fastest transatlantics of the world and the trophy of the Blue Band of Atlantic [2]. Their success built foundations of the first technical school Kgl-Preussische Hoehere Maschinenbauschule zu Stettin transformed

later to the State United School of the Machines Construction, Ship Builders and Marine Mechanics – “Vereinigte Technische Staatslehreanstalten zu Stettin” [3, 4, 5]. The article describes marine school structures and technical laboratory equipment intended to run specialized education of students in the area of marine technology.

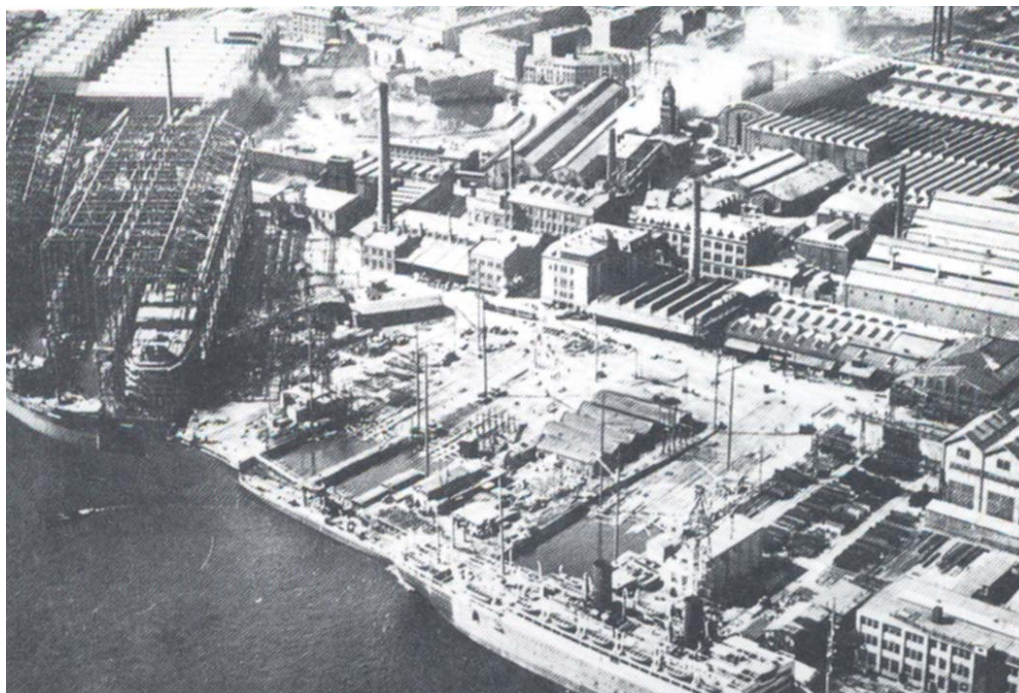


Fig. 1. The view of the Shipyard Vulcan in Szczecin at the beginning of 20th century Source: Materials from own postcards collection of the author [6].

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The time before the first world war in Szczecin - the king's- prussian college of machine construction “koeniglich-preussische hoehere maschinenbauschule”

On 23rd May 1899 in the Hotel Kaiserhof in Berlin the Technical Association of Ship Builders (“Schiffsbautechnischen Gesellschaft” under the honourable leadership of the Emperor of Germany William 2 – the

representative of the Grand Duke of Oldenburg - Fredrick Augustus was established. Profesor Carl Busley - the Secret Councillor of German Government became the chairman and Robert Zimmermann – the manager of the shipyard Vulcan (Stettiner Maschinenbau Gesellschaft Verft Vulcan) – one of the most important members of the management. A member of this association could be the person of minimum 28 years old, 8 years of experience in shipbuilding, being an officer on merchant or military ships or working in office at the shipowner. In 1900 only 680 members who met those requirements were registered in whole

Germany. After many attempts, as a consequence of personal pressures from the side of the Secret Emperor's Councilor Albert Ballin [8], the manager of Vulcan Shipyard Robert Zimmermann and the Germanischer Lloyd manager Fridrich Middendorf, the Prussian government succeeded to collect necessary money for opening the new Royal Prussian College of the Machines Construction „Koeniglich-Preussische Hoehere Maschinenbauschule zu Stettin” on the street called at that times Friedenstrasse 37. School building began on 17th April 1900. The raw state was closed on 31st.



Fig. 2. The view of the „Koeniglich - Preussische Hoehere Maschinenbauschule zu Stettin” on contemporary Street Friedenstrasse 37. (today in this place there is a building of the Electric Faculty of the West Pomeranian University of Technology in Szczecin on Sikorski Street). Source: Materials from own postcards collection of the author [6].

March 1901. In spite the quick building tempo, montage of school equipment lasted to April 1902, when the school officially started. The newly established school was concentrated on educating specialists necessary for the crew of the Szczecin's Shipyard Vulcan working at full stretch. In order to intensify the research and the education process of specialists in marine equipment servicing the number of laboratories were created. The laboratory where the research on the marine steam machines was the most important of them (Fig. 3).

It is worthwhile that the Szczecin's Shipyard Vulcan had many own achievements in this area building in that time the quickest passenger transatlantic liners in the world (winning the Blue Riband of Atlantic trophy) equipped with steam engines. Reports from Szczecin were then followed by the whole scientific world. In the laboratory new constructions and ideas of steam engines, their drive characteristics (indicator graphs) and efficiency characteristics were examined.

The laboratory to study marine steam kettles was another important workroom at school (Fig. 4). Different elements of hearths of steam kettles, boiler drum constructions and solutions of the water-steam installations in kettles were tested and studied here in order to find new, more efficient and reliable systems of large power steam kettles. In this area the school cooperated with specialists from Szczecin's Shipyard Vulcan. Noteworthy is the laboratory for investigating the ship constructional materials' properties, including steel for shipbuilding. The school had also some other laboratories except for those main educational and research ones. As an example can serve the laboratory for testing cooling installations, which are very important for ships voyaging to the contemporary German colonies (Fig. 5). It is worth mentioning that in the researched cooling systems a steam drive system of air-compressors was used. Another example can be the laboratory for investigating electric motors and electric

DC and AC driving systems (Fig.6). On these laboratory stands not only motors' driving characteristics were tested, but also possibilities of using them in the completely new area of driving technology - to drive a

number of auxiliary on-board devices. It is necessary here to stress the fact that at the beginning of 20th century the electric drive systems were not commonly used in the technology, especially in the shipbuilding.

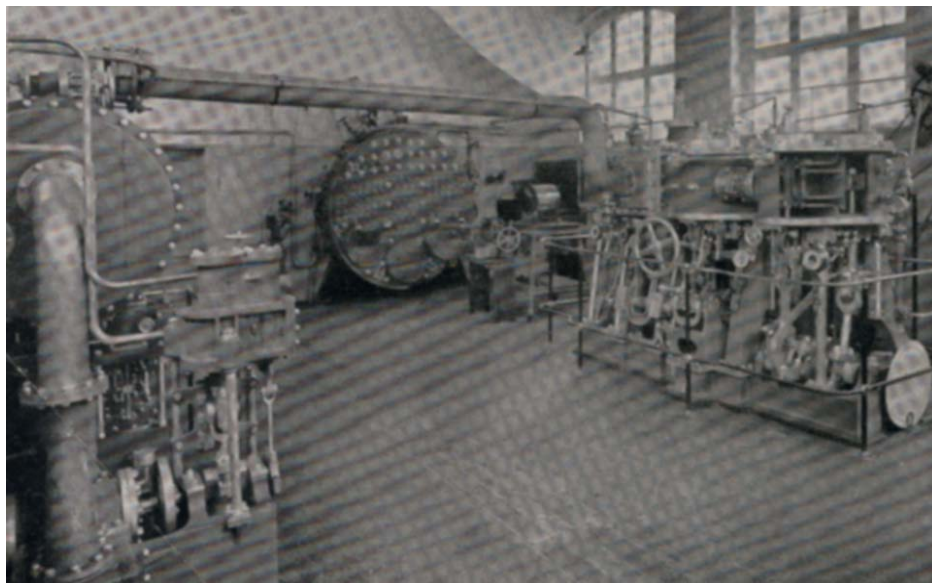


Fig.3. The view of laboratory rooms for research of marine steam engines. Source: Materials from own postcards collection of the author [6].

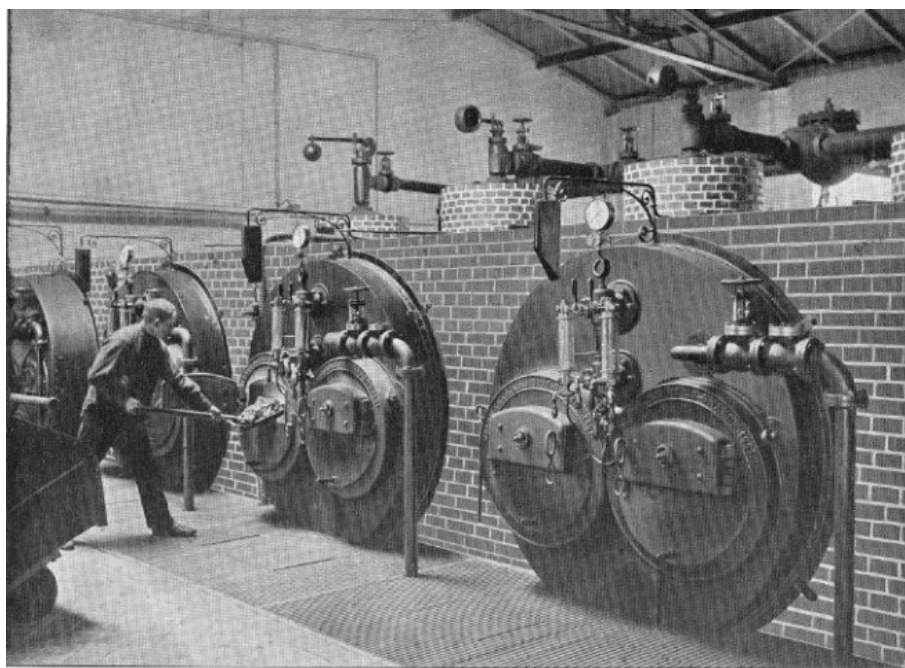


Fig.4. The view of laboratory rooms for research of ship marine steam-kettles. Source: L. Pasenow [4].

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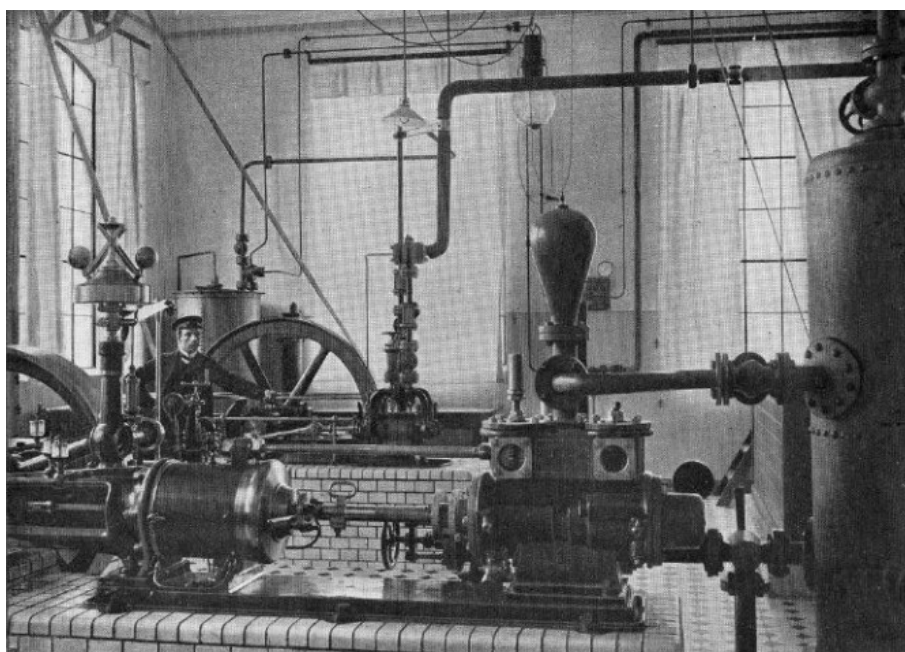


Fig.5. The laboratory for research of ship cooling systems. Source: L. Pasenow [4].

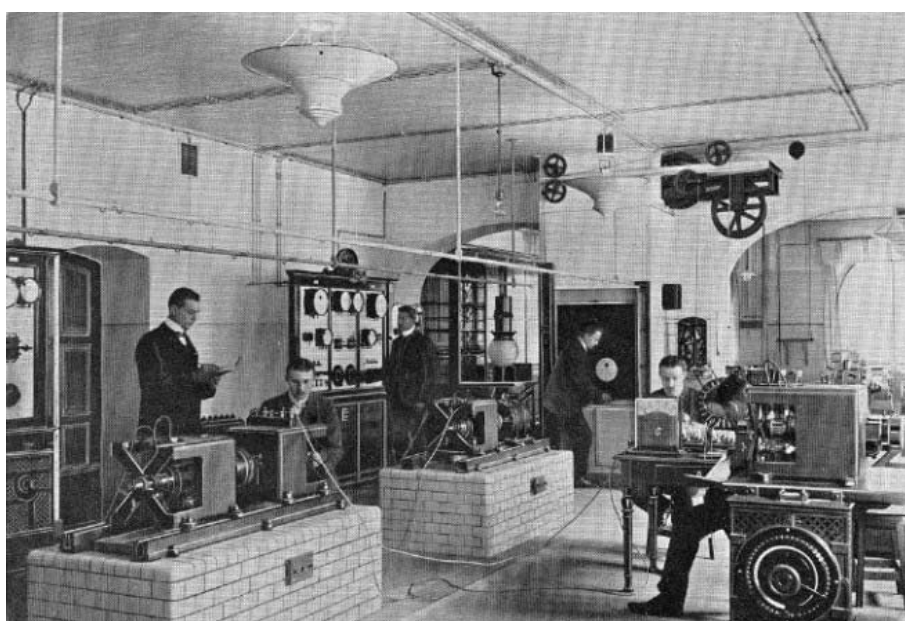


Fig.6. The laboratory for research of marine electric motors. Source: L. Pasenow [4].

Inter-war period - the state school - staatslehranstalten zu Stettin

The outbreak of the First World War, the German military defeat and gigantic financial troubles of contemporary Germany having to pay war reparations to the victorious Entente also affected the level of professional educational system in Szczecin. Szczecin's shipyard Vulcan also experienced a large stagnation, because before a war its existence was based mainly on state orders which were missing now. Therefore, the school authorities decided limit the school rank. That is how on the basis of so far existing Royal Prussian College of The Machines' Construction (Koeniglich - Preussische Hoehere Maschinenbauschule) the authorities created new State United School of the Machines Construction, Ship Builders and Marine Mechanics – "Vereinigte Technische Staatslehranstalten zu Stettin". From the very beginning the school was underinvested due to the crisis. The state did not invest into new expensive modern research laboratories using only those which already existed before the first World War. An important step forward was the creation of the laboratory for research of Diesel engines which were more often used in the marine ships (Fig. 7). Also the laboratory for

studying radio-technical systems is noteworthy here (Fig. 8). After the first World War radio devices became one of the most modern systems of communication on the sea, replacing wireless telegraphs. The above mentioned laboratory was also strongly supported by military side interested in using the research to military purposes. Here it is necessary to remind the reader that in the described time one of the greatest radio telecommunication towers in contemporary Germany was installed in the centre of Szczecin city, on Garnizonkirche Platz, on contemporary Karkutschstrasse (today the Andersa Square, on Wojciecha Street). This investment was a result, among others, of the cooperation of military authorities with the School Staatslehranstalten in Szczecin.

The laboratory for studying of prototypes of airplane devices belongs to the last important group of research laboratories. Turbulently developing aviation after the War imposed development of new workshops with testing laboratories for testing new construction solutions of airfoils, investigations of airplane resistances in wind tunnels and prototype versions of sport and civil airplanes in the back facility of the main school building (Fig. 9).

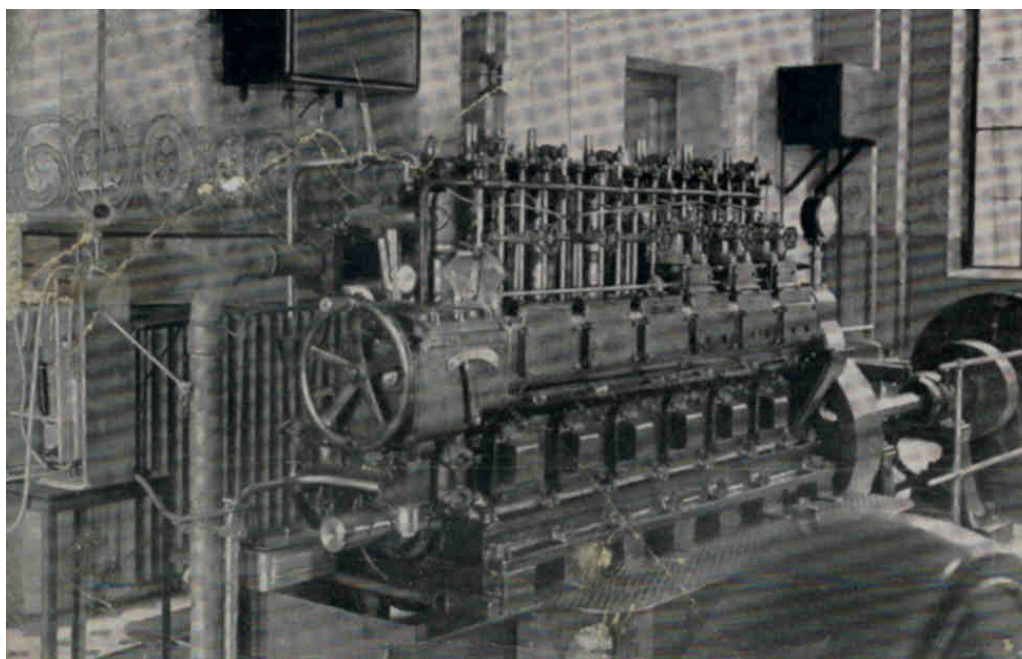


Fig.7. The view of laboratory rooms for research of marine Diesel engines. Source: Materials from own postcards collection of the author [6].

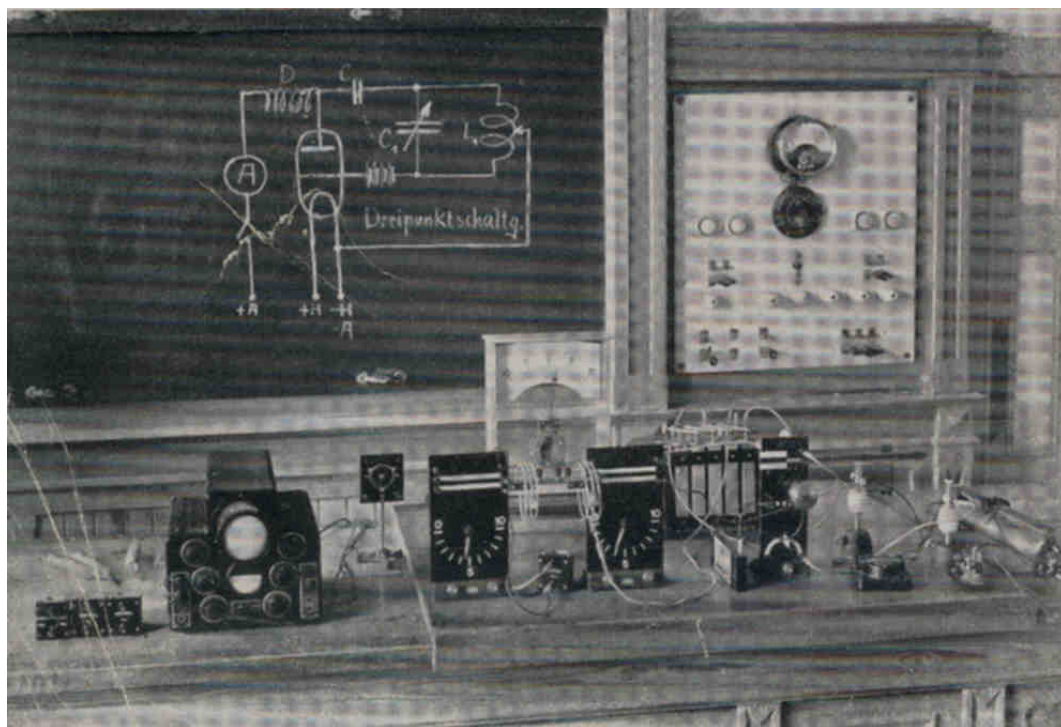


Fig.8. The laboratory for research of electro-drive and radio telecommunication systems. Source: Materials from own postcards collection of the author [6].

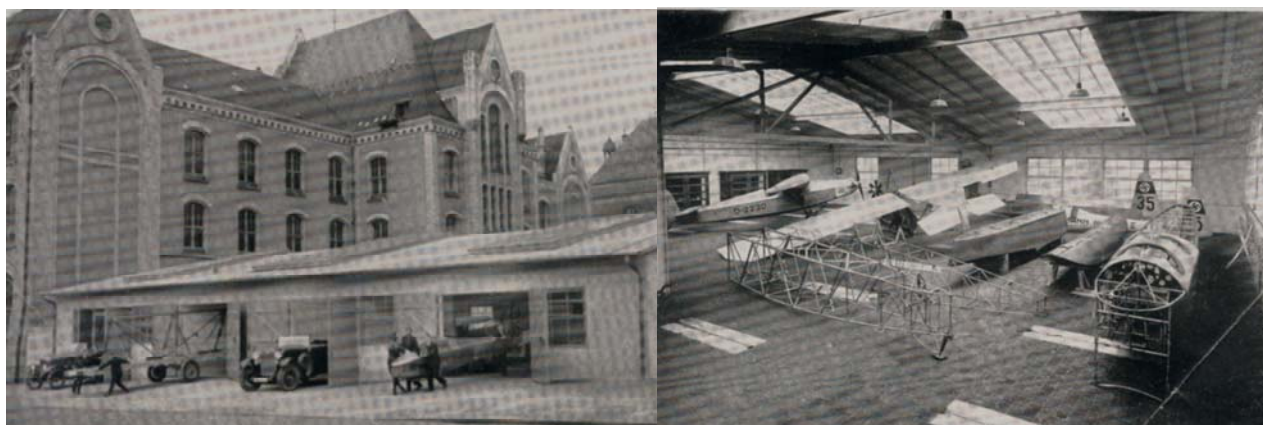


Fig.9. The laboratory for research of prototypes of airplane devices. Source: Materials from own postcards collection of the author [6].

Conclusions

Education of young generation of maritime technical specialists and engineers for local marine industry and trade played in Szczecin a very important and particular role from the old times. The big development of the maritime educational system in Szczecin at the beginning of 20th century resulted in the great development of Szczecin as a seaport and as a shipyard, especially Szczecin's Shipyard Vulcan, where the greatest and the quickest luxury transatlantic liners in the world were built in that time. The growing demand on the highly qualified personnel: engineers and technical experts in the field of shipbuilding caused the creation of

the Royal Prussian College of the Machines Construction „Koeniglich-Preussische Hoehere Maschinenbauschule zu Stettin” in 1901. The above-mentioned technical college was one of the first colleges in contemporary Germany. The essential part of the above mentioned school were newly formed technical laboratories for research and testing of the most modern solutions of equipment for the contemporarily built ships. These were research stations to study marine steam machines which were the main type of drive engines of ships, marine steam kettles, ships' cooling plants, electric motors, ship steel mechanical properties and others. Except for the laboratories for marine equipment there was a number of research stations meant

to investigate general engineering areas, including machines construction, technical drive systems, as well as equipment of manufacturing technologies used in the contemporary industries. German defeat in the First World War and the crisis effected in the decrease of the marine-educational system rank in Szczecin. Instead of Hoehere Maschinenbauschule zu Stettin which existed so far Staaatslehranstalten zu Stettin was established and

it had a status of a general technical school. Except for already existing laboratories, new ones appeared, what corresponded to quickly developing new areas of the contemporary techniques and technologies. Special attention needs to be paid to the laboratory for the research of Diesel engines, radio telecommunication systems' devices and airplanes' prototypes and aviation facilities.

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