DANUBE MONITOR S.M.S. LEITHA - PROBLEMS OF RESTORATION

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ACTUALITY OF S.M.S. LEITHA FOR THE RIJEKA CONFERENCE

The hull of the Danube monitor S.M.S. LEITHA is the one and only warship, or to put it more accurately, warship remnant of the K.u.K. Kriegsmarine that ceased to exist in 1918. There are three reasons to mention it at this present conference.

The first is the theme itself. A 132 years old warship is a monument of industry by its very nature, its restoration, maintenance, and presentation produce problems that come into this conference's field of interest.

The second is a historic link. The factory whose 150th anniversary we are celebrating now, established a branch on the Danube in Pest, then sold it to Hungarian investors in 1868. This became the first Hungarian owned yard capable of building steamships. This shipyard, established by people from Fiume, became the assembly site of the Imperial and Royal Danube Flottila's first tow warship-hulls, the monitors MAROS and LEITHA. In 1871 they were also launched there, MAROS on the 20th of April, LEITHA on the 17th of May. The two Danube warships were fitted out in the Óbuda (Altofen) shipyard of DDSG.

The third is something emotional. There is no doubt, in the legal sense LEITHA is undoubtedly owned by the Military History Museum of Budapest, and this way the State of Hungary. However, this question has other than legal aspects too, not the least significant of them being the emotional one. It is more than natural, that the present citizens of the Monarchy's successor states (if they know of its existence and if they are interested in it) emotionally consider this ship their own, as it was built from the taxes paid by their ancestors, they served and fought aboard it, and there were times when these ancestors felt the Empire protected by this ship their homeland.

This completely well-founded "emotional ownership", that could be felt by tens of millions of people, puts an increased moral responsibility on the shoulders of the legal owner, no matter if that accepted it or not. Of course this sort of emotional link and increased responsibility is not the exclusive privilege and honour of
LEITHA. It is valid for the Burg of Wienna as well as for Fort Mamula in Montenegro, or for the Whitehead Torpedo Factory of Rijeka. I am absolutely certain, that we who made this pilgrimage here on this occasion, all feel this sort of "emotional ownership" for the material remains of our common history. If it was not the case, we would not be here!

**SIGNIFICANCE OF LEITHA**

Let us see the significance and values of the ship, the reasons for its preservation, before we outline the tasks to be addressed, and their possibilities as well as their difficulties.

**Technological innovations of LEITHA (and its sister ship MAROS)**

The first river monitor in the world to have a Coles system gun turret. (data from dr. Molnár, György).

The very first river monitors of Europe.

The first warships of the Austro-Hungarian Monarchy

- built exclusively of metal, with armour protection,
- exclusively steam-powered (without sails and rigging)
- with turret
- with two shafts and two propellers
- to mount WC-type toilet (data from Friedrich Prasky)
- to utilize steel produced by the Bessemer-process (data from dr. Csonkaréti, Károly).

**Historical interests of LEITHA**

- On the 12th of August, 1914, the first fatal war casualty of the K.u.K. Kriegsmarine, sailor Huj János died aboard LEITHA at Drenovacka Ada on the river Sava.

- In their last months of service, February and March 1918, MAROS and LEITHA were the oldest units in active service of K.u.K. Kriegsmarine.

- They both took part in one of the first anti-Communist uprisings of the world in 24-26th of July, 1919. The unsuccessful event got its name "monitor rebellion" after them.

- The very last fatal casualty of K.u.K. Kriegsmarine occurred aboard LAJTA (ex-LEITHA), when Lieutenant-Commander Cicsery, László of Csicsér, one of the leaders of the rebellion died.
Present remarkableness of LEITHA/LAJTA

- As we have already mentioned, LEITHA is the only one of the ships of K.u.K. Kriegsmarine, that is still floating (at least its surviving hull).

- A 132 years old, armoured warship is an interesting object even when it has no other remarkable feature but its age.

- For today there remained 10 "monitor" type warships in the whole world. Two are under water, one is half sunk, three are ashore (one built into a monument, two as museums), and four are afloat. LEITHA is one of this last group, and the only one of them that was not restored.

Monitors under water are: USS MONITOR (1862) and USS TECUMSEH (1862) in the USA.

Half sunk monitor: HMAS CERBERUS (1868) in Australia.

Monitor as a monument: ZHELEZNIAKOV (1935) in the Ukraine.

Museum ashore: HNLMS SCHORPIONEN (1868), and HNLMS BUFFEL (also 1868) in the Netherlands.

Monitors afloat: HUASCAR (1865) in Chile, SMS LEITHA (1871) in Hungary, HMS SÖLVE (1872) in Sweden, HMS M33 (1915) in Great-Britain.

PRESENT CONDITION OF LEITHA

Technical conditions

To honour her, driven by tradition - or hoping for some brighter future - we tend to call her a "ship", though in her present condition she deserved only the classification "hulk", or "floating object". There remained no more just the empty hull of the late armoured warship.

The deck is still the old armoured one, that originally had no backing layer whatsoever. There are hatch-holes from her period as elevator-ship (1920-1992), the rain is falling in through them.

There are no bollards in sufficient number and quality, and so it cannot be moored reliably in open waters. She cannot drop anchor(s) according to regulations, and there are no means to raise anchor(s). Steering is not possible, as there are no rudders and no steering machinery.

The original frames are covered by later applied bottom and side plating of proper quality, and it makes the ship watertight. There are no traces of side-armour and its backing whatsoever.

Inside the old watertight bulkheads are standing (except for one, that figured in factory drawings, but disappeared completely), but they no longer fulfil their original function: large, unclosable holes were cut into them. As the demolished
old pumping system was never replaced, any leak would inevitably lead to the sinking of the hulk. Even rainwater can be removed only by external pumps.

No original space dividing bulkheads remained inside the hull, but a considerable number of water- and oil-tanks were installed while LEITHA served as an elevator. These are still in situ, and they hamper the reconfiguration of old arrangements.

There is no electric wiring, therefore the hull cannot be lighted even from an external source of power. There is no propelling or auxiliary machinery, no source of energy.

As a summary: the floating, but completely immobile hulk does not meet any sort of shipping regulation, so it is forbidden to tow it, or to moor it in open waters. It her present state no people under 18 years of age are permitted to step aboard, adults only with the express permission of the military harbour master, or his deputy, and only in small numbers, with escort, and at their own risk. This forced us to reject some very flattering foreign invitations, and the visits of larger groups as well.

**CONDITIONS OF OWNERSHIP**

As we have already mentioned, LEITHA is owned by the Military History Museum of Budapest, while she is treated and guarded by the riverine forces of Hungary's Armed Forces. None of these organizations posses the financial, material, and technological means, or the professional knowledge and will to reconstruct LEITHA, not even for the most necessary maintenance work.

In recent years a Hungarian industrialist volunteered to finance and carry out restoration. Mr. Pintér, József, has already established a significant park of military technology at the site of his company, in the municipality of Kecel. There he presented aircraft, tanks, self-propelled guns, artillery pieces, soft skin military vehicles, etc. owned by the Military History Museum and restored by the Pintér Works. He offered to transport LEITHA cut in three (!) to Kecel, there he would assemble it by welding, and then present her in some sort of artificial pond. This quite bizarre offer was accepted by both the owner and the guardian with relief, as - to tell the truth - none knew what to do with the old hulk. At the end the project came to nothing for reasons beyond the LEITHA.

There appeared no new volunteer since this attempt, but that is no big problem, if the hull still holds out for a while, and it continues to have a guarded harbour. (None is certain.) Before the start of the hoped for (and at present completely hopeless) restoration it is a must to decide, what do we want to make of her, and then in what sort of ownership, economic, and technical form, and where do we want to operate it.¹
POSSIBLE FORMS FOR THE PRESERVATION OF OLD SHIPS

The post-restoration survival of any industrial object (factory building, railway station, dock, harbour facilities, or anything else) could be ensured with the greatest certainty by finding it some useful function well before saving it. The most useful are the same or very similar functions to the original.

1. In case of ships this could naturally be navigation itself. Hungary is one of the countries that posses some passenger ships - once driven by steam-engines, today unfortunately by diesels - that hold or at least deserved the status of historical monument. On lake Balaton there are HELKA and KELÉN (built in 1891), JÓKAI (1913), on the Danube HÓFEHÉRKE (1895), and HALAP (1921). These earn their keep, and there are no special troubles with them. (With emphasis on "special", as there are always a lot of run of the mill problems with any ship.)

From a certain aspect this was the case with LEITHA too for a long while, because as a working elevator-ship it not only kept herself going, but also produced some

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1 The condition of the old monitor hull is only seemingly satisfying though it was declared a historical monument and it is owned by a museum. None of the research workers of the Military History Museum is dealing with naval history (which is an understandable state of affairs for historic, political, and practical reasons too!). Even the obtaining of LEITHA/LAJTA failed to raise any enthusiasm in them. They only happily accepted, that a group of amateur volunteers, under the leadership of the writer of the present lines, obtained a warship hull for their museum. It is just as natural, that there is no one in the museum who understood how much work could be provided by a 50 m long hulk floating in real water.

Those were other civilian outsiders who got through with the dismantling - free of charge! - of approximately 60 tons of non-warship machinery, then overcame some protests, and made Home Defence Forces' Riverine Flotilla (Honvéd Folyami Flottilla) to take over the possession of the Military History Museum for guarding and maintenance. This is an absolutely unique legal and economic situation, army lawyers and accountant officers shaking their heads in disapproval a lot. All these did and do happen on the basis of personal contacts, powered by friendly gestures or illegal patriotic zeal, and with the unspoken consent of the higher military leadership. However, up to the present day the author has not managed to make them issue a written order that would put down in straight sentences the owner's and the guardian's duties and responsibility for the monitor, and would create a financial background for those. It could be a dangerous set of circumstances even in chivvy street, not to mention the military community.

LEITHA-s lot was further complicated by the fact, that on the 31st of July, 2002, a ministerial order disbanded the Home Defence Forces' Riverine Flotilla, this extremely popular formation, which had 4500 members at its peak. It used to be the oldest Hungarian military formation, as the legally uninterrupted successor of K.u.K. Donauflottille. (It is worth mentioning, that the K.u.K. formation never reached the above mentioned personnel strength!) The ministerial order produced such a general outcry, that it was not carried out to the letter, but the personnel strength and the number of vessels was reduced to a minimum, then this fragment of a unit was put under the military explosives disposal regiment's command. However, another reduction of military establishments was planned for 2003 - one in a long and never ending series - and so the future of the remaining riverine forces, and that of LEITHA with them, is very uncertain. The legal status of historical monument is an easily undone standing too!
fine handy profits for her owners. It could survive so long this way. However, approximately when it was discovered, it was also declared outdated an uneconomical as an elevator. Her very survival was threatened, and it forced her "fans" to act. 2

2. Another good solution could be an owner (private person, non government organization, or company) who used the old ship for sport or representation purposes - as a ship. In this case public access is denied, but preservation is guaranteed. An example for this solution is the former sailing cutter KISHAMIS (1896) on Balaton, and the older Hungarian owned steamship, ZOLTÁN (1869) on the Danube.

3. It makes the financing of maintenance much more difficult when the ship does not navigate, but virtually performs the functions of a building at some stationary mooring, as a restaurant, bar, hotel, casino, etc.. In cases like this the operator is prone to neglect maintenance (or unable to perform it because of restricted profits) and the ship deteriorates. In an even worse scenario the operator is only leasing the ship, and the owner is some state or municipal institute. This happened to KOSSUTH (1913), a one funnel side-wheeler steamer permanently moored in Budapest, and to the double funnel paddlewheeler SZÖKE TISZA (1917) in Szeged. The last mentioned one is probably already unrecoverable. BALATON (1872), standing ashore by lake Balaton also comes under this heading.

4. Economically the worst solution is a museum-ship. This is the certain recipe for deficit anywhere in the world. Entry fees never cover maintenance costs, and even extremely disciplined visitors mean a heavy burden for the ship. (And they tend to

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2 As the non-Hungarian literature contains a lot of inaccuracies on this topic, it well worth outlining this period of our ship. Sometime in the 1880s the "Danube Dredging and Steamship Company & Cast Stone Factory" of Hirsch, József Lajos (Hirsch József Lajos "Dunakotró- és Gőzhajózási Vállalat és Műkögyára", Bp. VII. Károly körút 17.) started to operate in Budapest. The company office was directed by Fleischmann, Antal, its shipping director was dr. Delmár, Tivadar. It was not a big enterprise, according to the Shipping Calendar (Hajós Naptár) of 1906, it worked with two propeller driven steamers, one dredger, and one elevator. Around 1908 Fleischmann took over the company. It was him who purchased the - in Korneuburg - demilitarised hulks of monitors SMS LEITHA and SZAMOS, and had river-gravel elevator machineries installed on them. Some authors regularly mentioned them as "dredgers", but that is a completely different set of machines. When reconstructed as a work-boat, LEITHA was renamed JÓZSEF LAJOS after the founder of the company, and SZAMOS became TIVADAR after the director. The firm was taken over by the director and his family in 1936. The new company title became: "Construction Entrepreneurs Emil, Walter, and Tivadar Delmár's Danube Dredging and Danube Shipping Company" ("Delmár Emil, Walter, és Tivadar építési vállalkozó Dunakotrási és Dunahajózási Vállalat"). This was nationalized in 1948, then it was unified with several other firms of the same industry, to produce the "River Regulation and Gravel Dredging Firm" ("Folyamszabályozó és Kavicskotró Vállalat", "FOKA"). Under this new ownership LEITHA got the designation FK-201, and SZAMOS FK-202 instead of names. In the spring of 1992 FOKA (and LEITHA within it) was sold to a Swiss company, and this author managed to regain the old ship from them for the 6th of October, 1993.
be extremely undisciplined!) This form of operation could be recommended only for wealthy countries, where a financially strong owner is seriously willing to run the museum-ship for prestige, hobby, or marketing reasons.

The situation of a museum-ship is assured only in countries, where the whole nation is proudly cultivating its heritage, cherishing the ship as a historical treasure, spends money and effort on it, and expects the same - in a not uncertain manner - from its elected representatives, as well as from state agencies financed from its taxes. Theoretically this type of public opinion could occur in a poor country too, however these tend to be stricken by a loud, demagogic layer, screaming about "waste", and - oh, that ever present danger of all social saviours! - "nationalism".

We have told a lot of bad things about "museum-ships", as a possible form of preservation of old ships, but there is hardly any other way for an old warship.

There has to be an extra decision made on LEITHA over the usual questions coming up when restoring an old ship. As she had such a long carrier, she had a very comprehensive reconstruction (in 1892-1894), and several lesser refits, that also produced very visible results. Our question to decide is: If LEITHA is to be restored, then to which condition of hers? There are pros and contras for each of them.

POSSIBLE FORMS OF LEITHA'S RESTORATION

1./ Storage of the present, vacant, superstructureless, hull ashore.

**Purpose:** Preservation of the hull, and the possibility of a later restoration.

**Construction tasks:** Lifting the hull and positioning it in an enclosed territory with legally and technically assured future. Some sort of roof is needed to keep out rain and sunshine.

**Advantage:** It can be solved with a comparatively small investment, future maintenance is almost free (though she must be painted time and again even in this inglorious situation!) Eminently suitable to quieten our perhaps bad consciences, and to lay all responsibility to the doorstep of the next generation. Available for scientific analysis and photography for publications.

**Disadvantage:** It is only storage (though that is no small fry!), to present it in this condition makes no sense. Any chairborne warrior or clerk could easily come up with the idea, how much more profitable it could be to scrap this heap of rust!

2./ The presentation of the hull in its present state afloat.

**Purpose:** Preventing further deterioration of the hull, making it watertight. Providing the conditions of towability and safe mooring, and so the movement of the hulk according to regulations, even abroad. Presentability under safe
conditions, the creation of an exhibition-reception space within the hull. All these preserving the possibility of a later, complete, reconstruction.

Construction tasks: Outside: Elimination of not contemporary hatches on deck, restoration of original ones, and lighting windows in a watertight, yet historically fateful way, reconstruction of original engine-room hatch and transparent covering (glass or plexi) of that. Mooring and anchoring fittings, similar to original. The bases of superstructures from various ages painted in different colours on the deck. Reconstruction of bowstick, stern flagstaff, and two masts, and this way creation of possibility for small and great flag decoration.

Assuring some form of steering could also be very useful. It would make towage and mooring much easier. However, it makes restoration much more expensive.

The safe movement of visitors aboard is a difficult task. A replica of the original chain-railing provides no safety, but an efficient system of railing would change the whole character of the ship. People under 14 years had better be banned from the ship, but with them we would lose our most enthusiastic visitors.

Inside: Provide ventilation for internal spaces, removal of non-original walls, tanks, restoration of original watertight bulkheads, complete with the accurate (size and arrangement) reconstruction of the original passages and doors. Marking the location of original, not watertight, bulkheads. Creation of a reception capable exhibition space in place of the original engine- and boiler-rooms, and bunkers. Making internal walkways safe with some fire resistant material.

Providing the means of pumping bilge and rain water. Electric wiring for external and internal lighting, connection to external electric power source.

Advantage: It is comparatively cheap (that is compared to complete restoration!), makes the hull easy to handle navigationally, it can be well and safely presentable, suitable for smaller tradition honouring events or exhibitions, perhaps for modest representative occasions of the military. These works can produce no historically significant falsification.

Disadvantage: the pontoon like hulk obtained this way does not remind of the appearance of a warship, its inclusion among the sights of a town is hardly supportable, it has almost no attraction for tourists. However, it demands the same standard of mooring and guarding, as a completely restored ship would.

For movement or presentation specialist navigation crew of several persons is needed. In the sunny season, from May to September, the spaces inside the hull become unbearably hot, any exhibition material is going to be ruined within one season. In winter time condensed water takes over, and destroys everything. (It is true for all solutions without insulation and air conditioning!)
3./ Reconstruction of the 1872 conditions

Purpose: To reproduce the first, extremely astonishing, outlook of the monitor, and the original internals, so as to give visitors the original "monitor feeling".

Construction tasks: Outside: Gun turret of 5 diameter and 2 m height, plus steering/command tower on it. It could be done according to several standards, from just marking the volume of the turret, to accurately rebuilding it, to working order, with guns, ammunition, and turning mechanism. (This solution is contradicted by the fact, that we do not know the exact mechanism of the turret, and on the other hand, a significant portion of the deck from 1894 has to be demolished for this, with its holding structures. It is not certain, that we make a "fair deal" destroying certainly original parts for presenting one of the reconstructions of a 130 years old artillery enigma.) The rebuilding of other deckhouses brings no technical problem.

Inside: The following cabins and chambers are to be rebuilt and refurnished: forward the commander's, officers', and petty officers' cabins, in the middle the lower part of the gun turret with gun imitations, under the stern crew accommodation, food storeroom, cabins of the senior non-commissioned officers. Boiler- and engine-rooms would also serve exhibition purposes, with the bunkers separated on the sides. Of course all task of Solution No. 2. are valid here too.

Advantage: There are very few warships preserved from this era of naval technology. Her unusual shape could make her a tourist attraction. If one had a 132 years old warship, it seems to be the right thing to present it in its 132 years old form.

Disadvantage: The main characteristic of this version of LEITHA was the small number and size of deckhouses. It means a double disadvantage for a museum-ship: there are few things to see, and there is no room for the crew to oversee the ship. (Few and little deckhouses mean few handholds, sp the risk of falling into water is also high.) The enormous gun turret is the sole attraction, but it could be interesting only if an exact - and working - copy of the original. As we have seen, it is easier said than done.

4./ Reconstruction of a later condition

Purpose: the presentation of the maximum possible number of superstructures and weapons.

Construction tasks: Rebuilding of the chosen form. Air conditioning and heating of some rooms, provision of the necessary own source of power. All the tasks prescribed in Solution No. 2 are also to be carried out.

Advantage: The large, varied superstructure, their internal spaces, and the upper deck provide a lot of interesting things to see. Safer movement on deck, as there is the possibility of constructing historically not correct, but undisturbing
handholds, the original toilet could be used by visitors too, protected place to stay and watch could be provided for the crew. The accurate drawings of the later type of turret and superstructures are available, therefore they can be fatefully reconstructed. Its location is still visible on deck, nothing old and valuable is to be demolished for its construction.

Disadvantage: The ship reconstructed this way does not look 132 years old any more, but shows all marks of forced modifications. This is the most expensive solution both to build and to operate.

5./ Is there to be a power-plant?

Theoretically some sort of driving machinery could be included both in Solutions No. 3 and 4. It could be

a/ working reconstruction of the original boilers and steam-engine,

b/ an imitation of that, combined with

c/ a modern, efficient engine - probably diesel.

The fact, that we have no accurate drawings of the original machinery, and therefore any reconstruction would contain a considerable element of fiction do conflict with a/ and b/. Providing trained stokers and enginers could also prove very difficult, when even the State Railways no longer run steam-engines.

With Solution c/ the very different technology of another age would "mess up" the interior of a former steamship. No doubt, it would have an enormous advantage being able to move independently, not depending on outside factors. However, in this case another crew member is also needed, holding a captain's license, and this would make the ship's operation even more expensive.

The present author did not intend to take sides in the questions of the reconstruction of LEITHA/LAJTA, he only wanted to make the experts dealing with the protection of our industrial heritage, and the interested general public acquainted with the present situation and future possibilities of this extraordinary relic of technology and military history. Perhaps it does not seem to be pompousness to hope, that he managed to make the task of the decision-makers (personally yet unknown for him) easier by presenting the practical tasks to be solved, combined with the possible alternatives.

Translated by Dr. György MOLNÁR
I. međunarodna konferencija u povodu 150. obljetnice tvornice torpeda u Rijeci i očuvanja riječke industrijske baštine

Shipyard in Újpest - 1868

The original plan of the LEITHA
Model of the original form (1872-)

Pre-war form (1894-1914)
I. međunarodna konferencija u povodu 150. obljetnice tvornice torpeda u Rijeci i očuvanja riječke industrijske baštine

Wartime (1914-18)

Peacetime equipment (1922 - 1992)
Transformations of the ship
The shape of the hull after elevator machines have been removed (1996)

LEITHA - the current shape compared with the plan

125th birthday - 17th May 1996
Jedrenjak SMS Leitha jedini je brod k.u k. ratne mornarice koji je još na vodi. Taj ratni spomenik velike duhovne vrijednosti može se s pravom vezati uz Stabilimento Tecnico Fiumano koji je povod ovoj obljetnici.


Abstract

DANUBE MONITOR S.M.S. LEITHA – PROBLEMS OF RESTORATION
András Margitay-Becht

The former SMS LEITHA is the only vessel of the KuK Kriegsmarine, which is still afloat. This military monument of high spiritual value can be linked justly to the “Stabilimento Tecnico Fiumano”, being the subject of this anniversary. In 1866 namely, this seaside shipyard established a daughter company on the Pest-side shore of the Danube, which had been able to operate very successfully for two years. In 1868 the factory site was sold to Hungarian investors, who have founded the “Elso Magyar Pest-Fiumei Hajógyar Rt.” (First Hungarian Pest-Fiume Shipyard Co.) here. This company built the hulls for the first sister monitors MAROS and LEITHA. The building of the two warships was finalized at the Obuda yard of the Donau Pampfschiffahrt Gesellschaft. This time I will not go into the 49 year (1871-1920) history of the warship and the 72 years (1920-92) spent as gravel loading working machine (i.e. NOT a dredger!). The original hull of the old monitor was found sometime in the 80’s by the Hungarian ship historian dr. jur. Karoly Csonkareti, and his Austrian colleague, Ing. Friedrich Prasky. As a result of several years of organizing work by the late Ivan MOLNAR, colonel in pension of the Hungarian Royal Fleet Forces, and dr. med. dent. Andras MARGITAY-BECHT, major in reserve, honorary councilor of the Military Museum, the LEITHA was pronounced as preserved industrial monument on 11th Nov. 1992. On Oct. 6th 1993 she came into the possession of the Military Museum, and between February and May of 1994 the hull was freed of the 60 tons of work machines erected on her. Thanks to their connections, aggressive type arguing and solid moral blackmailing, a work worth of 75000 USD had been performed free of charge and against a large number of prosthetic and filling dentistry respectively. The LEITHA was 125 years old in 1996. We organized an international birthday party for the reconstructed hull, and it was open to the public for ten days. On 6th - 8th November we remembered the 80th anniversary of the dissolution of the Imperial and Royal Danube Flotilla. The main actor of these festivities had been the LEITHA also. Since then the reconstruction is at a standstill. The reason for this is the lack of capital, the continuous military re-organizations, the lack of suitable contractors, debates about the conception of the reconstruction, as well as the indecision about the future site and operation of the museum ship. The above should also be considered as the order of importance! As these questions arise with the reconstruction of other vintage ships or industrial objects, the review of the situation of the LEITHA may be of wide spread interest.