

Agenda

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| 1. | The Port of Würzburg |
| 2. | Shorepower basics |
| 3. | Shorepower projects |
| 4. | Outlook |





Port of Würzburg

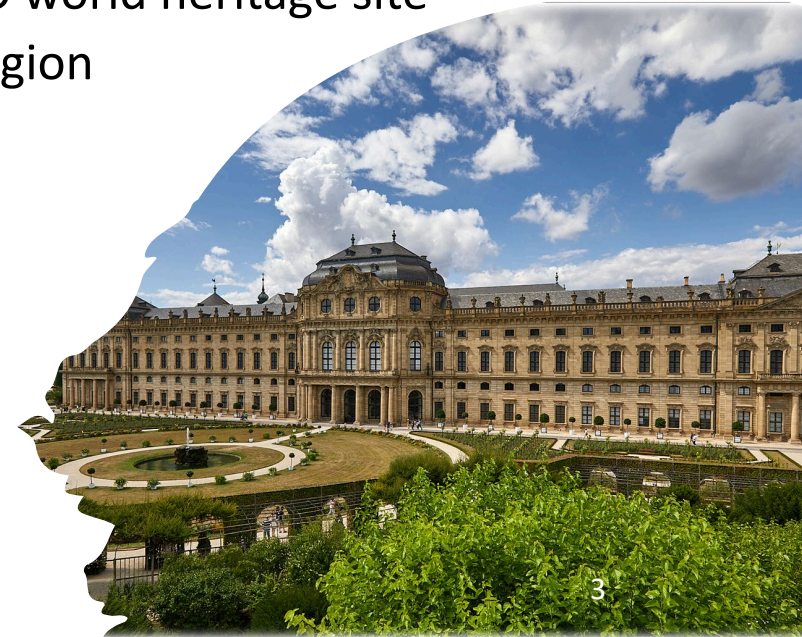
The Port of Würzburg

- An important port in north bavaria
- North Sea – Black Sea transport
- Located at one of the most important railway junctions Germany



Würzburger Versorgungs- und Verkehrs-GmbH

- Tourism Hotspot
- UNESCO world heritage site
- Wine region



„Industrie Port“ Würzburg



Rivercruise Piers



Shore power available

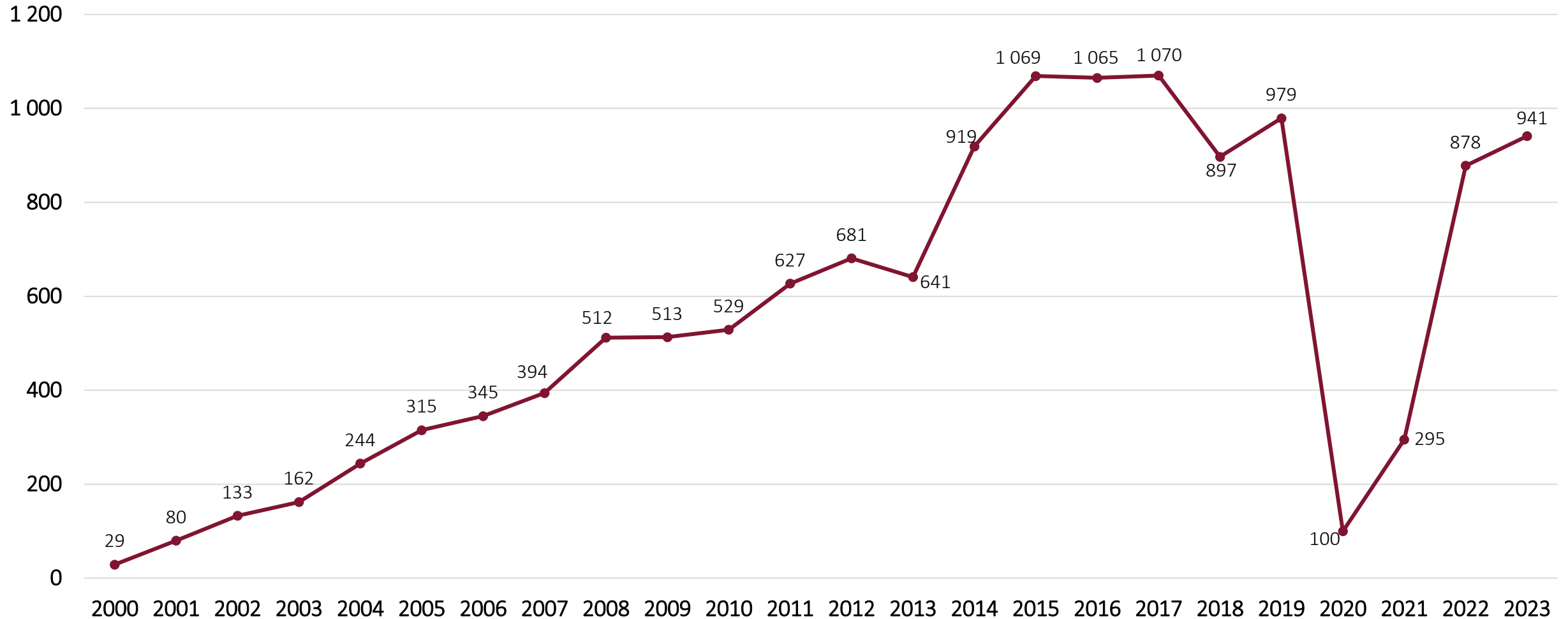
- 6 Terminals with 2x400 A PL
- 5 Terminals for Drinking water



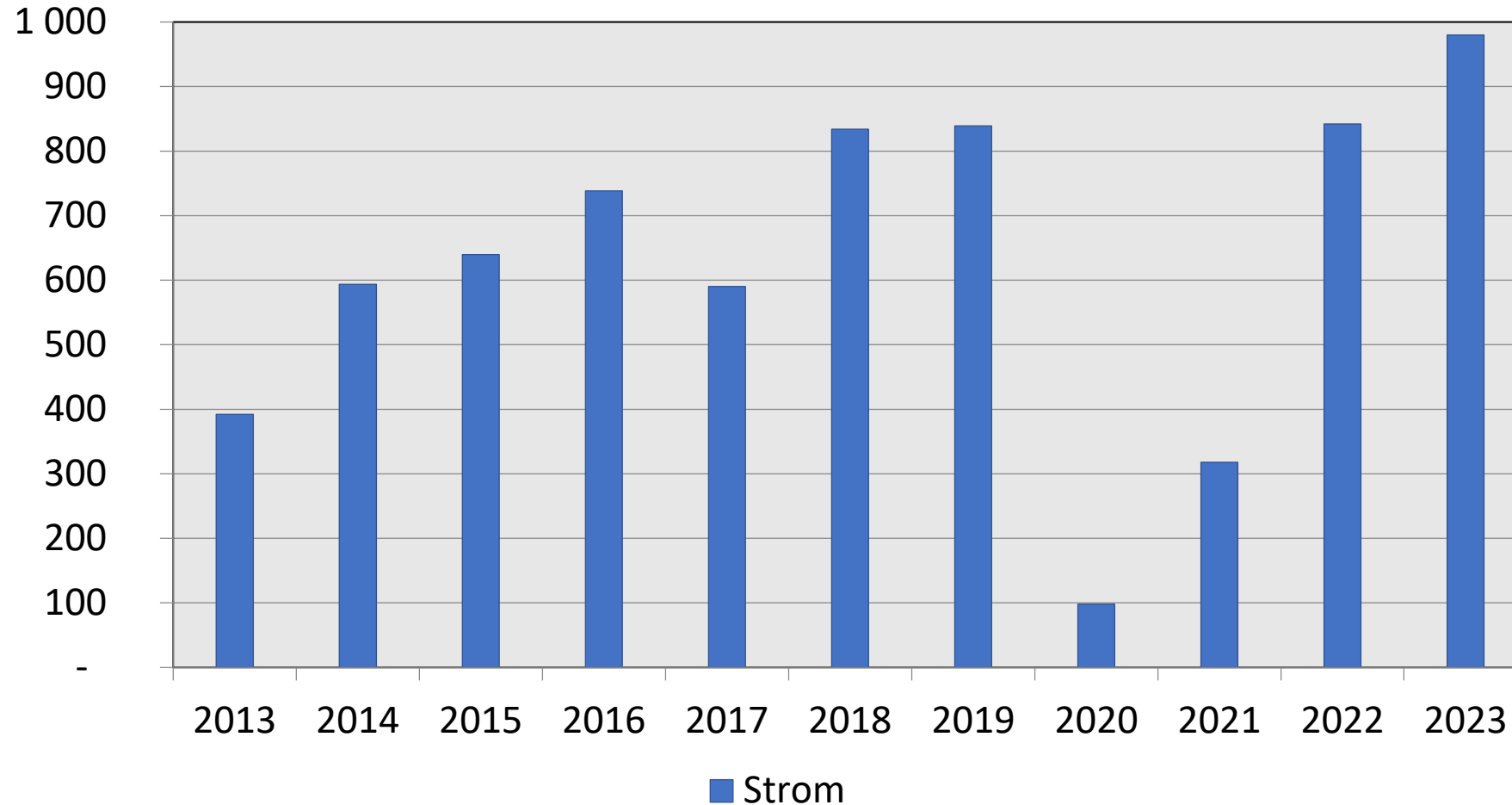
dockings of the Rivercruise ships per year



Ships per year



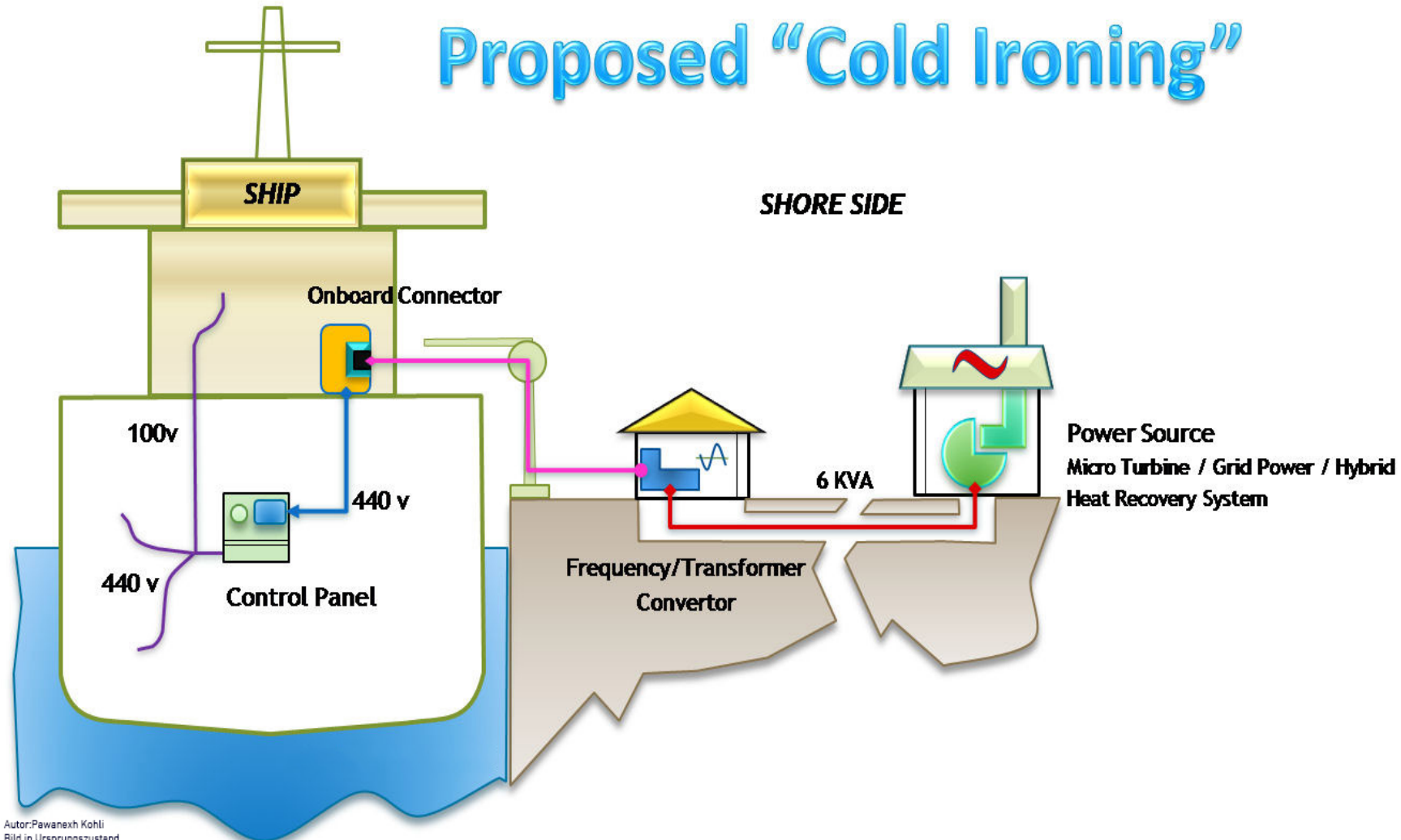
Energieverbrauch gesamt in MWh



Shorepower Basics



Proposed "Cold Ironing"



Autor: Pawanekh Kohli
Bild in Ursprungszustand
Lizenz: <https://creativecommons.org/licenses/by-sa/3.0/>

differences

Type of Ships	Power	Plug Connection
Sports boats	0-16A	CEE 230 V (blue)
Cargo vessels	20-100A	CEE 400V (red)
River cruise vessels	300-800A	Powerlock 400V



The development of shorepower in Würzburg

- 2005 First landing stage for cruise vessels „Mainländer L2“

Located right in the city

Regulation from the city of Würzburg

→ you have to use shorepower



- 2015 equipped with new standard terminals
RFID cards
Extra Safety funktion



Energieterminal

- separate Meter
- Extra safety function
- Registration with RFID Card or App
- *operate without staff on site*

Shorepower Projects



Projects



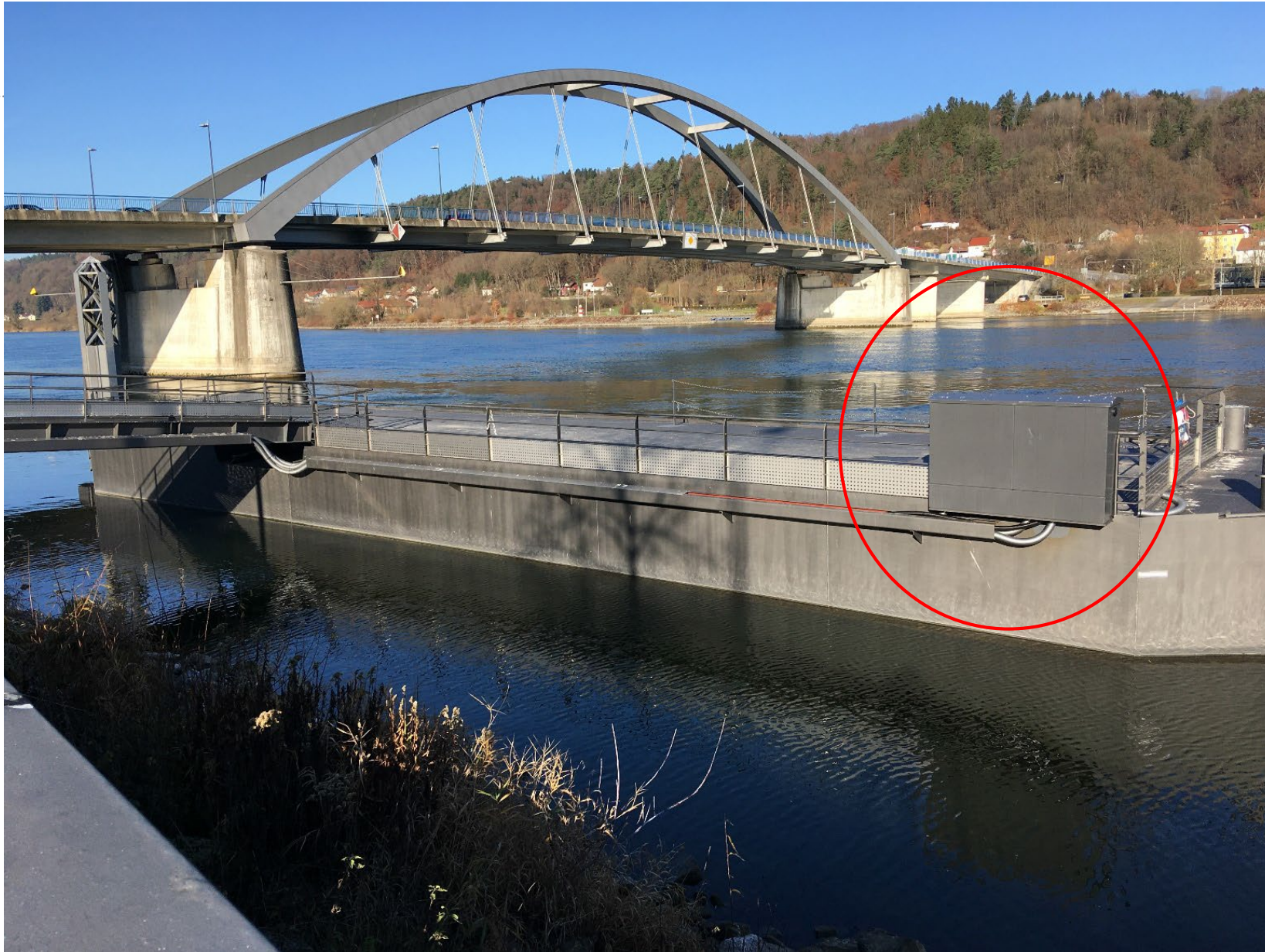














Outlook

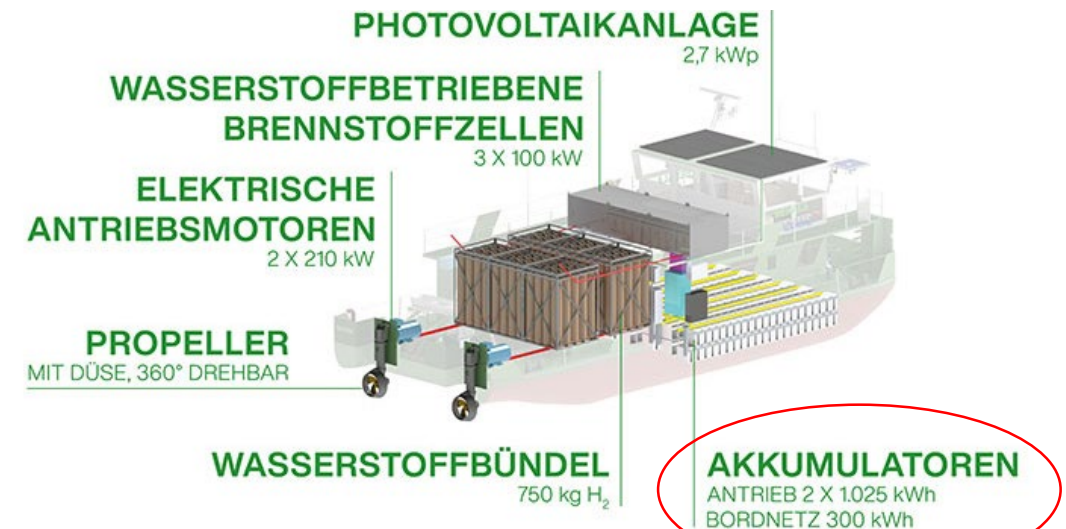


Shore power will also be used to charge batteries in the future

Cruise Ships with diesel and electric engines and a battery storage



Hydrogen fuel cell cargo vessel



Quelle: <https://www.behala.de/elektra/>

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Thanks very much!

