Hydrogen filling stations and high-power charging for trucks in Baden-Württemberg – the PiLaTes project

Dr. Anna-Lena Klingler | Strategic Dialogue for the Automotive Sector in BW, Brussels | 17. November 2022





Baden-Württemberg state government funds pilot charging and H2 fuel station infrastructure for long-distance trucks

- As an outcome of the Strategic Dialogue on the future of the Automotive Industry (SDA), it was decided to promote a pilot charging and H₂ fuel station infrastructure in order to test and deploy battery-electric and hydrogen trucks
- The future viability of the infrastructure, i.e. megawatt charging and fuel stations with gaseous and liquid hydrogen, is to be investigated and ensured.
- The following partners are involved in the project »Pilot charging and refueling infrastructure for long-distance trucks (PiLaTes)«

Daimler Truck AG, EnBW Energie Baden-Württemberg AG, Fraunhofer-Institut for Industrial Engineering IAO, Fraunhofer-Institut for Solar Energy Systems ISE, Fraunhofer-Institut for Systems and Innovation Research ISI, H2 MOBILITY Germany GmbH & Co. KG, Iveco Group, Netze BW GmbH.



Signed Letter of Intent, October 2021



Objectives of the project and schedule

The pilot charging and H2 fuel station infrastructure will be conducted in **three phase**:

Pre-project (Acronym »VorPiLaTes«): July – November 2022

Objective: Identification of suitable location for the construction of the infrastructure and preparation of the realisation

■ Implementation project (Acronym »PiLaTes«): starting in 2023

Objective: Planning and installation of a demonstrator for high-performance charging and H₂-fuel station infrastructure in Baden-Württemberg

Scale-up project: starting 2024 (?)

Objective I: Installation of additional four to ten locations in Baden-Württemberg Objective II: Developing a plan for further implementation of locations to meet Baden-Württemberg's to infrastructure targets of the European climate package »Fit for 55«



We are currently in the **pre-project** phase in the **identification of suitable locations**.



Objectives of the pre-project »VorPiLaTes«

1

2

3



Systematic evaluation of potential locations in Baden-Württemberg

Identification of suitable location(s)

Lessons learned





Systematic evaluation of potential locations in Baden-Württemberg

Methodology: Literature-based identification of relevant location features

Road	infrastructure		
TT1	ریسر TEN-T Core Network		
TT2	TEN-T Comprehensive Network		
Industry & Cargo		Poin	ts of interest
HA	Harbour	PP	Parking space
BH	Train station	WC	Toilet
FH	Airport	RA	Service area
GU	Other cargo handling sites	RE	Restaurant
GI	Commercial and industrial area	TA	Fuel station
ME	Exhibition grounds	AH	Off-highway service area
GM	Wholesale market	HO	Hotel / Motel
_		SH	Shop
Land	Land use		Car wash
Urb	Urban area	WS	Repair shop
InCom	Commercial/industrial area		
Tra	Transport area		
Art	Other artificial areas		
Oth	Other or unknown		



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Systematic evaluation of potential locations in Baden-Württemberg

Methodology: Literature-based identification of relevant location features and subsequent derivation of feature weights





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Systematic evaluation of potential locations in Baden-Württemberg

Methodology: Literature-based identification of relevant location features and subsequent derivation of feature weights

			Feature	Weight	-
Road	infrastructure		TT1	5,3%	
TT1	TEN-T Core Network	المتحب المستحب	TT2	1,8%	
TT2	TFN-T Comprehensive Ne	atwork	на	0,3%	
				1%	
Indus	stry &			3%	HIGH
НА	Harb			1%	
DU	Train)%	
	11dill	TOP 5 FEATURES (usors' porsportivo)		6%	1
FΗ	Airpo	IOF S FEATORES (users perspective)		6%	
GU	Othe	1. Commercial and industrial area		1%	
GI	Com			3%	
ME	Exhit	2. Parking space		3%	
GM	Who	2 Destrooms		7%	
	_	5. Restrooms)%	
Land	use	4 Restaurant		1%	LOW
Urb	Urk			1%	
InCom	Co	5. Repair shop		5%	
Tra	Tra			1%	
Λrt				1%	
Ait				70	1
Oth	Otr				
Seite 7					
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Systematic evaluation of potential locations in Baden-Württemberg Results





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[Source: Judith Auer, Fraunhofer ISI, 2022]

Systematic evaluation of potential locations in Baden-Württemberg Results



- **246 public truck rest areas** analysed in Baden-Württemberg
- Most suitable locations at the highways
- > Additional features from operators'/project's perspective:
 - **Available space**: 3000 5000 m²
 - Feasibility of implementation, i.e., owners' willingness, availability of location within the given time frame



Procedure

For additional information, we ...

- Contacted location owners, multipliers, e.g., Economic Development Corporations
- ... published a press release
- Overall, we talked with 21 location owners
- And identified **3 promising locations**





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Procedure

For additional information, we ...

- Contacted location owners, multipliers, e.g., Economic Development Corporations
- > ... published a **press release**
- Overall, we talked with 21 location owners
- And identified **3 promising locations**





Potential sites



»Gewerbepark Darmsheim«

Industrial area near Böblingen/Stuttgart

- Pilot-infrastructure would be suitable for the area's development plan towards a sustainable industrial park
- Parking space available
- 5 min to highway A81
- ✓ Potential user present at the area
- Highway A81 little frequented by long-distance trucks
- No service area or toilets



Potential sites



»Stuttgart Flughafen / Messe«

Truck park at Stuttgart Exhibition / Trade fair grounds

- Pilot-infrastructure would be suitable for the area's development plan towards a sustainable industrial park
- Parking space available
- 5 min to highway A8
- Restrooms available
- Available space is limited and has to be shared with trucks coming to the exhibitions
- Probably high rent



Potential sites



»Shell-Autohof Ettenheim-West«

Off-highway service area between Offenburg/Freiburg

- ✓ 5 min to highway A5
- Service area and toilets available
- Location owner interested in expansion and potential area for expansion available
- Construction of infrastructure would require change in land use designation for available area



Lessons learned

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- H₂ fuel station and high-power charging infrastructure target different user groups and require different features in the early stages.
- Available and designated areas for infrastructure development in the vicinity of highway exits are scarce.
- Changes in land use designation are time consuming and difficult.

Additional areas should be created and incentivized.

Awareness should be increased among the public, fleet operators and fuel station owners **about transition towards zero emission trucks** within **the next years.**



Contact



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