

cross border project use of waste heat from the Badische Stahlwerke



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Referat 63 - Energieeffizienz in Haushalten und Unternehmen

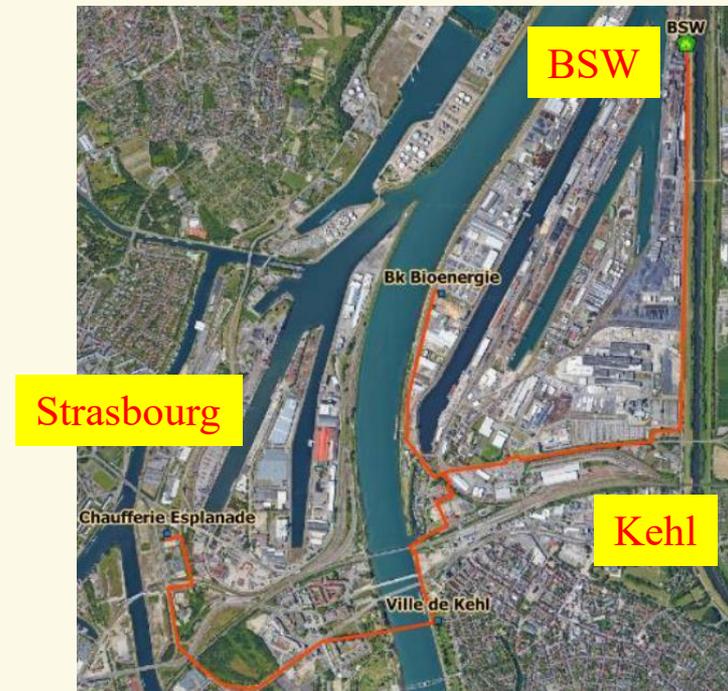


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Badische Stahlwerke (BSW)



- production ca. 2 Mio. t /a construction-steel
mostly made of melted car wrecks
- energy consumption: 2.200 GWh/a
(electricity 40%, gas 30%, coal 10%)
- max. power from electric-arc furnaces: 20 MW
- enormous amount of waste heat
→ trying to capture and use heat
→ not possible economically only in Germany
- idea of the internat. project in a congress end of 2017
BSW, UM-BW, BWMi, KEA

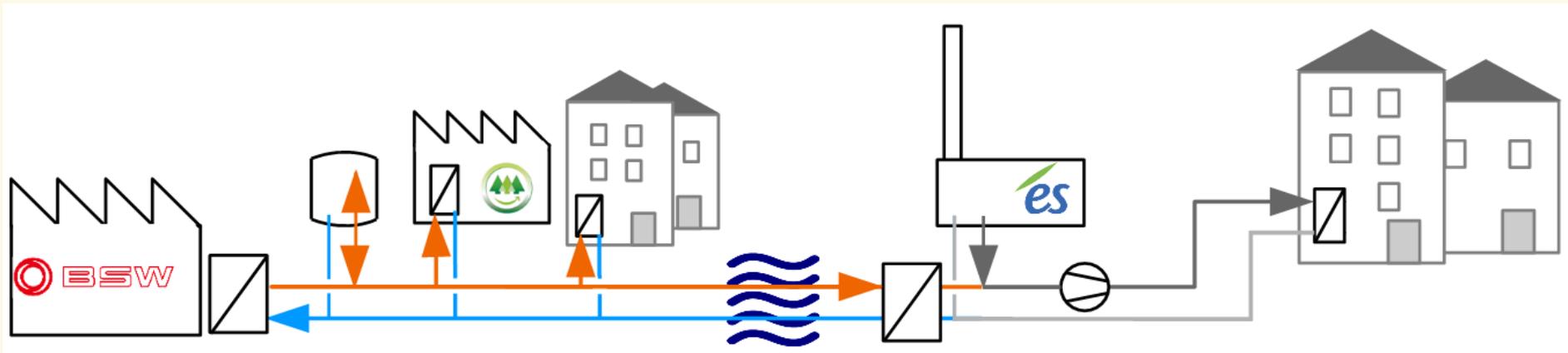


key facts of the project

- Usable waste-heat potential at the first stage: around 70 GWh/a, 20 MW (depending on operating times and heat demand)
- Full waste-heat potential from the BSW electric-arc furnaces: 135 GWh/a
- Number of households supplied in Strasbourg: more than 4,500
- Heat supply of companies and households in Kehl
- CO₂-savings at the first stage of the project: around 15,000 t CO₂/a
- CO₂- savings at further expansion levels: up to 30,000 t CO₂/a
- Length of the heat-pipe from BSW to heating plant in Strasbourg: 4,5 km
- 2,6 km build in microtunnel-drilling
- budget: ca. 25,5 Mio€ + 11 Mio€ BSW, ca. 30-40% subsidies



technical obstacles and implementation



- + High potential of direct extraction from air of the electric-arc furnaces
- New construction of the primary cooling system required due to high temperature recovery
- No continuous production (revision – in winter)

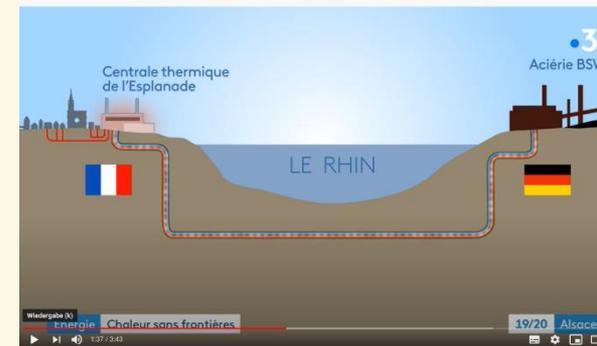
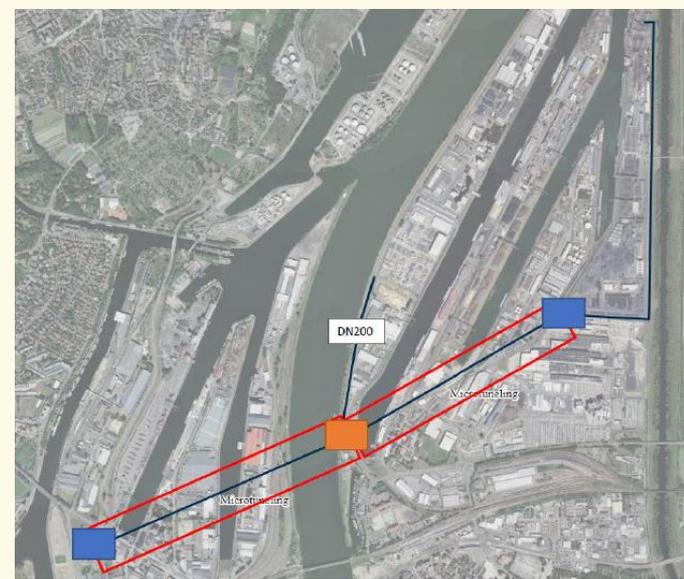
- using existing bridge for crossing the Rhine is not possible (load)
- Contaminated areas,
- Crossing of streets, water pipes and railroad tracks in the way
→ microtunneling as a solution

- + Feeding into existing district heating network in the centre of Strasbourg
- + High expansion potential in the heating network (Kehl + Strasbourg)
- Consumers with high temperature requirements → flow temperature of up to 150 °C necessary
- Existing base load generators (biomass)



intended route

- Section 1 : Laying in trenches in the Kinzig river-bed: 1.500 m
- Section 2 : Laying in trenches south of property of the BSW: 460 m
- Section 3 : Microtunnel until the reserved land at the Rhine bank: 1.200 m
- Section 4: Microtunnel from reserved land at the Rhinebank until Esplanade heating plant: 1.400 m
- Section 5: trenches to BK Bioenergy: 850m DN 200



„La chaleur d'une aciérie allemande récupérée à Strasbourg via un tunnel sous le Rhin



milestones



July 2018
Commissioning of the feasibility study

May 2019
Signature of a common Memorandum of Understanding

November 2019
Legal form has been found for the heat transport company: "SEM"

2018

December 2017
Political initiative to relaunch the project idea

2019

May 2018
First german-french project meeting

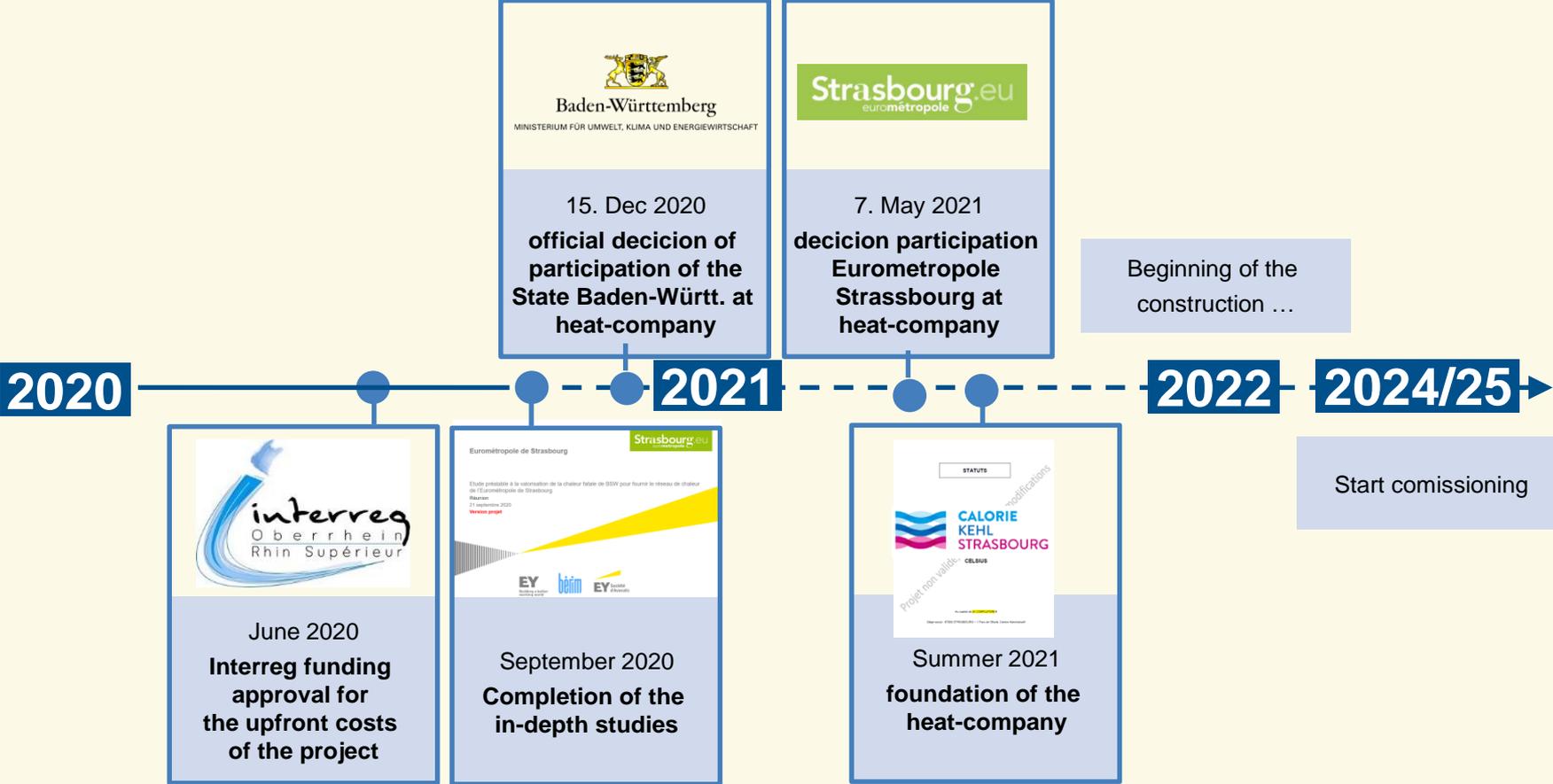
February 2019
Feasibility study confirms technical and economic implementability

November 2019
Basic engineering for the heat extraction has been developed



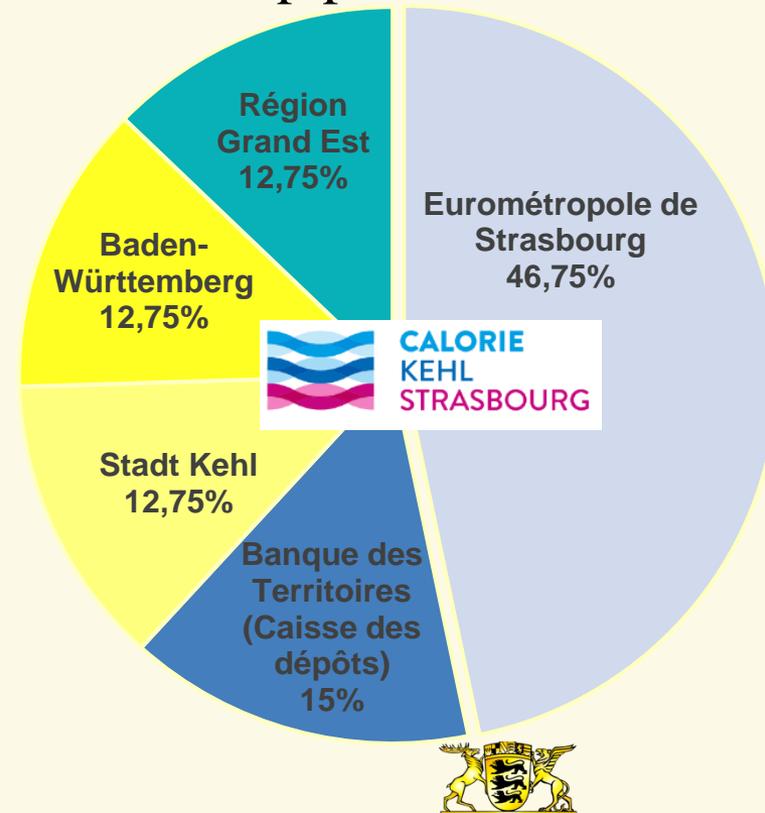
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current status and next steps



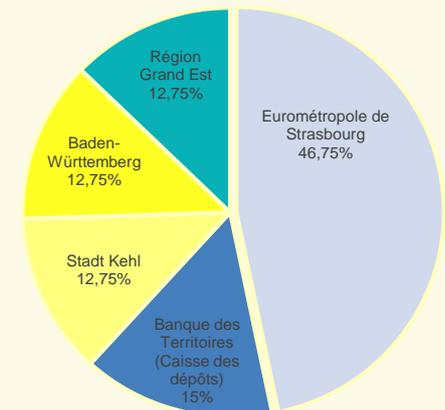
partners of the heat company

- network of partners will build and operate the heat-pipeline
- French-German company
(SEM= société économique mixte)
„Calorie Kehl-Strasbourg“
- privat: 15%, Caisse de Depot
- public sector: 85%
- Eurometropole Strasbourg
55% of 85% → 46,75%
- 15% of 85% each
Region Grand Est → 12,75%
Stadt Kehl → 12,75%
Land BW → 12,75%



costs

- Costs of the heat-pipe installation: around 25,5 million €
- about two thirds on the German side and one third on the French side
- financing SEM:
 - 1/3 shares bought by partners
 according their part of SEM
 - 2/3 financed by loans
- Cost for heat-extraction at BSW:
about 11,5 million €
(financed by BSW)



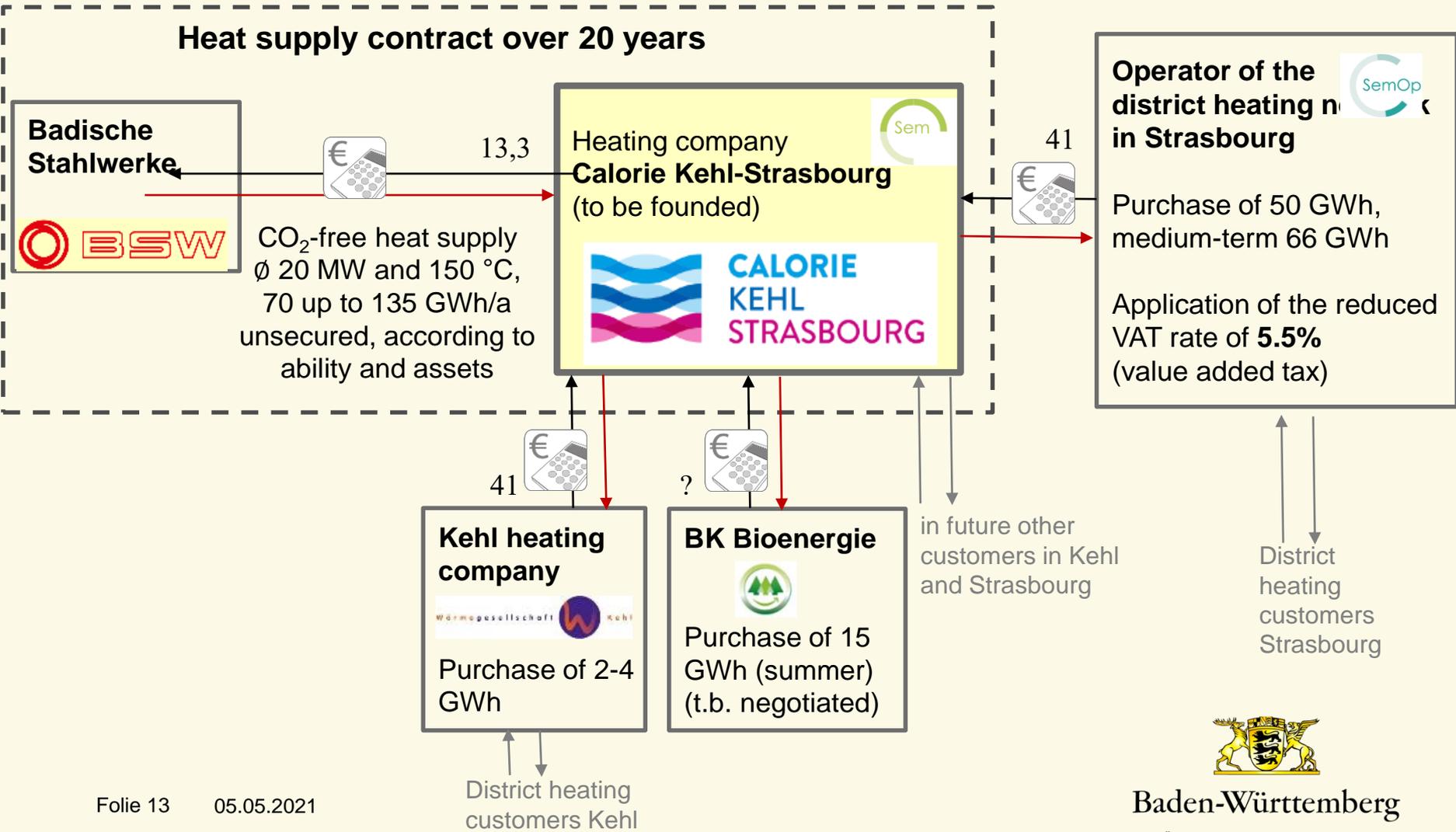
subsidies

- Expected subsidies for the SEM Kehl-Strasbourg (heat-pipe) are up to 50 % of total investment costs, the expected average is 40 %:
- more than 4 million € from BMWi/BAFA
- more than 6 million € from Fonds Chaleur (ADEME)
- 1 million € from Interreg Oberrhein for planning costs and additional 1 € million expected for the second project phase
- Expected subsidies for BSW (heat-extraction): around 30 % of investment costs, 3,45 million € from BMWi/BAFA



heat trading relationship

Heat supply contract over 20 years



summary

- Projects for external use of waste heat are complex and costly, especially in cross-border constellation
- Such projects require special engagement of all partners, external support and an appropriate share funding
- promotion programs for consulting, project-management and investment are necessary – and available
- establishing an international cross-border heat alliance and founding a international company is particularly challenging
- but in the long run: the enormous efforts are worthwhile
→ don't give up also if there seems to be no way



Thank for your attention!
... any questions?

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