

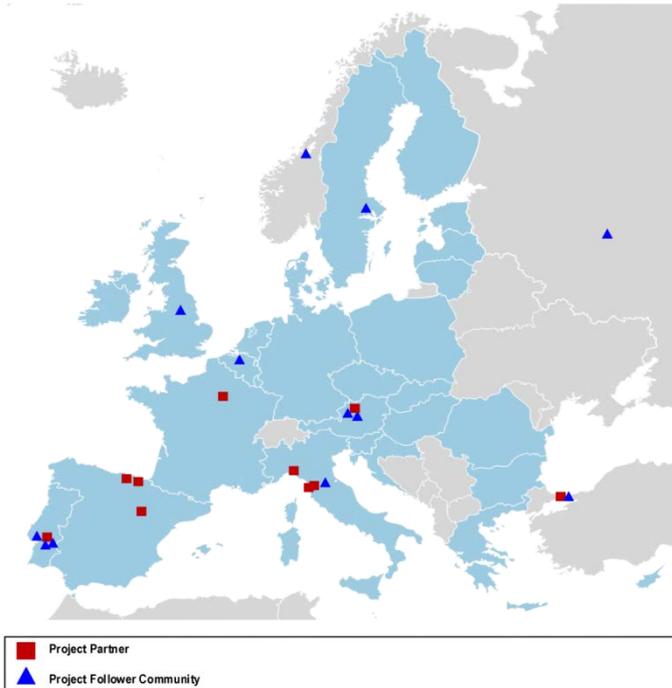


S-PARCS

**SUSTAINABLE ENERGY
COOPERATION FOR INDUSTRIAL
SITES
OVERVIEW, RESULTS AND
RECOMMENDATIONS FROM THE H2020-
PROJECT S-PARCS**

Danube Port Days, Ennshafen, 17th November 2020

Overview: The S-PARCS Consortium



6 Countries

5 Lighthouse Parks

2 Universities

4 Research Institutes

1 Communication Expert

22 Followers

March 2018 – June 2021



S-PARCS presents a sound concept for reducing energy costs and energy consumption in industrial parks, while, at the same time, increasing renewable on-site energy production.

OBJECTIVES



1. Increase competitiveness by developing, testing and deploying **replicable instruments for energy cooperation**
2. Develop, test and deploy replicable business **models for joint contracting of energy services** for industrial parks
3. Contribute to the creation of **legal and regulatory frameworks** that accelerate and facilitate the adoption of innovative instruments for energy cooperation
4. **Build capacities** and increase the skills and competencies

ACTIVITIES



1. **State of the art of energy cooperation** in industrial parks – solutions opportunities and barriers will be identified
2. **Envisioning innovative instruments and business models** for enhances energy cooperation
3. Development of the **Industrial Park Service Initial Assessment Tool**
4. **Support industrial parks** for enhancing energy cooperation

Key Partners in S-PARCS: 5 Lighthouse Industrial Parks



Ennschafen, Austria:
Port & mixed Business Park



Ponte a Egola, Italy:
Center of the Italian
Leather Industry



Chemiepark, Austria
• Chemical Industry



**Okamika-Gizaburuaga &
Bidosola-Artea, Spain**
• Mixed SME Business Parks

State of the Art of Energy Cooperation in Industrial Parks: Solutions, Opportunities & Barriers

We identified **41** energy cooperation **SOLUTIONS** & clustered them in **5** categories:

- ❖ Managerial Actions
- ❖ Contractual Instruments
- ❖ New physical installations
- ❖ Information and Communication Technologies
- ❖ Logistics and Mobility

→ Focus on the **cooperation part**: this is the innovation

Each solutions was matched with barriers to their implementation. **BARRIERS** clustered in **5** categories:

- ❖ Economic
- ❖ Social-managerial
- ❖ Framework
- ❖ Technical/Engineering
- ❖ Information provision

→ **Social / organizational** and information provision barriers are often the most crucial barriers for industrial energy cooperation (result from expert interviews in the park)

Overcoming barriers: Instruments, Business Models & legal aspects

For each barrier, **INSTRUMENTS** to overcome them were developed:

The **most valuable instruments** are those that have been identified as **transversal both to various barriers within the same cluster and to various clusters:**

Examples for key instruments:

- ❖ **Training and awareness raising activities**
- ❖ **Enhance communication** between companies within the same park
- ❖ **Energy audits, feasibility assessments and life cycle analysis**
→ Necessity to quantify the opportunities to activate the financing procedure

Three BUSINESS MODEL archetypes were developed and matched with the most promising solutions:

- i) maximise material and energy efficiency
- ii) create value from waste
- iii) substitute with renewables and natural resources

LEGAL ASPECTS:

Ongoing activity: **Policy Briefs** on legal, regulatory & standardization issues in Spain, Austria and Italy are forthcoming

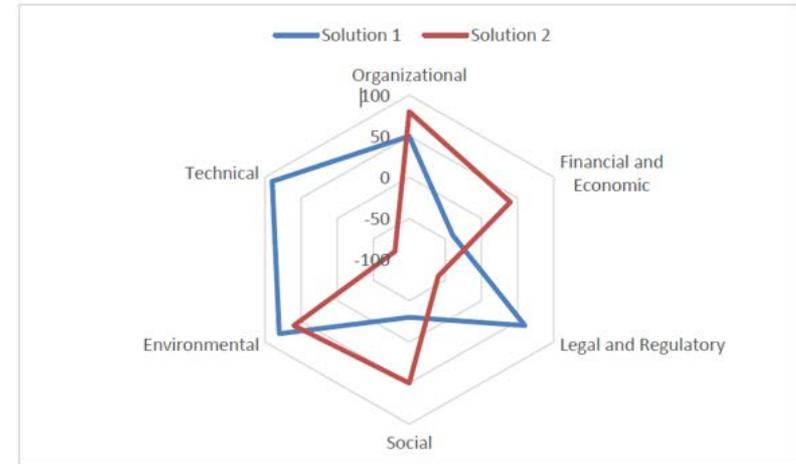
Assessing Industrial Parks → Key Performance Indicators for the monitoring and assessment of the Lighthouse Parks

There are 6 different types of KPIs:

- ✓ Organizational
- ✓ Financial and Economic
- ✓ Legal and regulatory
- ✓ Social
- ✓ Environmental
- ✓ Technical

Alternatively to a full assessment, two options for a partial assessment are available, based on:

- A) Minimum number of KPI per category chosen by user
 - B) Predefined core KPIs
- Main purpose of the assessment is to evaluate the performance of a solution and to compare different solutions within a park/company.



For each impact category, a **quantitative measure of performance P** is assessed.

P ranges from -100% (low performance) to 100% (very good performance).

Ongoing Activities: Feasibility Studies for the most promising solutions & Development of Energy Cooperation Plans



Several of the cooperative projects owe their profitability to their cooperative character, showing that energy cooperation can significantly expand the pool of sustainability, renewable energy and energy efficiency measures available to companies.



S-PARCS

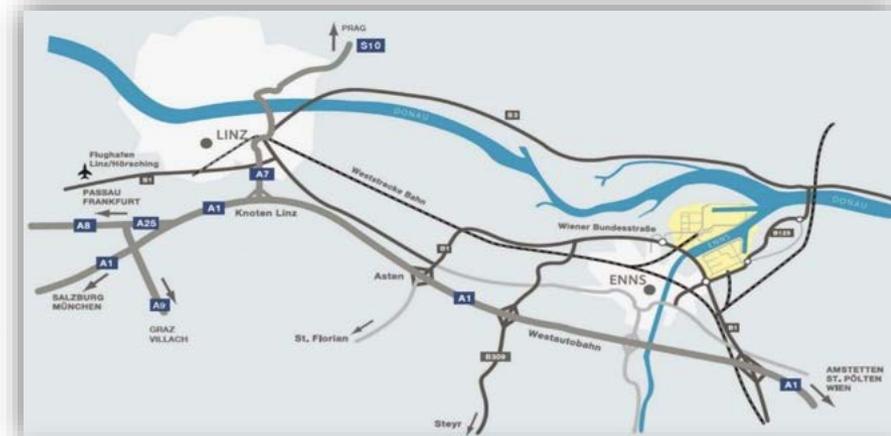
**LIGHTHOUSE PARK:
ENNSHAFEN PORT &
INDUSTRIAL BUSINESS PARK**

Danube Port Days, Ennschafen, 17th November 2020

- ❖ Approx. 60 companies with 2,600 employees
- ❖ Located at the mouth of the river Enns into the Danube
- ❖ Total area of 3,530,000 sqm
- ❖ Trimodal infrastructure (waterway, rail, road)
- ❖ Roll-on/roll-off terminal
- ❖ Most modern container terminal in Austria
- ❖ “Public private partnership” between the public sector und private enterprise
- ❖ Free space to accommodate business and projects
- ❖ TEN-T Core Node: ENNSHAFEN port is defined as one of two Austrian core nodes in the Rhine-Danube-Corridor



- ❖ logistics hub including two business parcs
- ❖ perfect location in the center of the strongest industrial region of Austria
- ❖ direct access to motorways and main roads
- ❖ Heterogenic businesses including ...
 - ❖ wood processing company
 - ❖ industrial laundry service
 - ❖ specialized recycling companies
 - ❖ producers of animal feed, edible oil, talc and zeolites
 - ❖ transport, storage and shipping of cereals, salt and other goods
 - ❖ automotive suppliers, machinery
 - ❖ container terminal, package distribution



- ❖ Development started more than 40 years ago, no overall master plan – changes
- ❖ Heterogeneous branches in the port&park – Public Private Partnership
- ❖ Some shared infrastructure (port facilities, railway, sewers, water lines, roads, lighting, overall marketing for industrial park)
- ❖ Low level of business relations between companies and competing interests
- ❖ Broad range of processes, E-demand, temperature levels, waste heat potentials
- ❖ Optimization potentials remain despite some well optimized businesses
- ❖ Historical land and infrastructure ownership as well as physical distances cause difficulties for energy cooperation
- ❖ Lack of knowledge of processes of neighboring companies
- ❖ Cooperation solutions are most likely to be bilateral physical exchanges of energy, sharing of logistical infrastructure & knowledge transfer
- ❖ Companies are aware that energy (incl. decarbo, ...) will be a critical factor in the future for business – they are interesting to face the next decade's challenges

During the S-PARCS project a option-list was established as basis for further energy cooperation activities on the site.

3 detailed feasibility studies have been performed which resulted in sound basic information for future project and investment decision.

Photovoltaics on the premises of the Ennshafen port & park

Shared e-mobility charging points

Shore side electricity for port users

Work is ongoing and will bring up much more details during the establishment of the Port Development Plan and will serve as basis for next decade development of the port & business park.

❖ Realized/ongoing projects or under development

- Park-internal energy working group was installed on the basis of an existing board
 - *2 workshops realized (COVID hampered meetings), next one scheduled for spring > 2 x p.a.*
- Inter-company waste-heat utilization
 - *Sewage water waste heat of industrial cleaner → building heating for neighboring company via heat pump*
- Joint strategy on e-mobility → (Joint) charging infrastructure (passenger cars) / stepwise approach
- Photovoltaics: masterplan and stepwise investments (up to now: appr. 2 MW installed)
- Joint strategy on optimizing heavy transport → LNG/CNG infrastructure
- Shore side electricity for anchoring vessels

❖ Further ideas in discussion

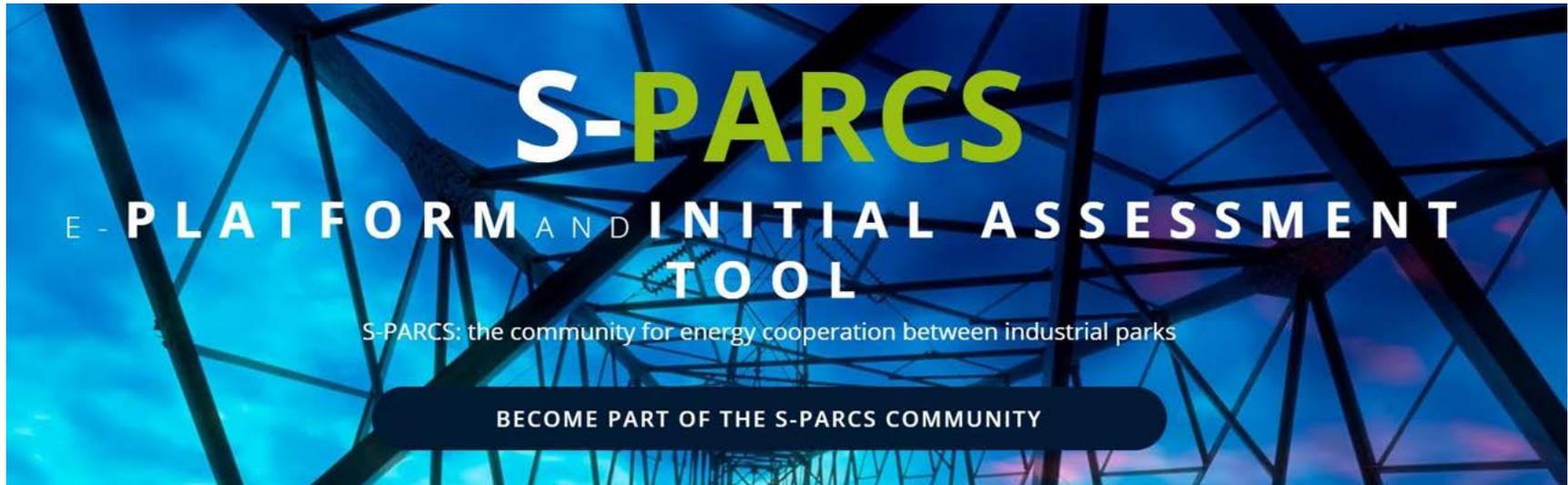
- Joint purchase of energy
- Joint implementation/purchase/financing of PV power plants

❖ Necessity for

- Providing (more) information, focus on communication & networking on energy topics
- Recording of and documenting information and success stories
- Ensure trust between companies and with respect to data handling
- External facilitators or supporters
-

If you are interested in energy cooperation, visit the [S-PARCS Community Website](https://www.sparcs-community.eu/)

<https://www.sparcs-community.eu/>



Moreover, keep posted on the project updates by following #sparcsh2020 on [LinkedIn](#): Starting this week, we will post weekly S-PARCS #flashlights and present key results of our project!

The S-PARCS community and tool

S-PARCS community and **initial assessment tool** are free online ICT tools



✓ supporting the **decision-making** and **solution-finding** processes in industrial parks

The S-PARCS community and tool

S-PARCS community and **initial assessment tool** are free online ICT tools

Date	Last modification	Solution's title	Type of solution	City of implementation	EUETS 2	Country	Status	Publish	Info	Edit	Delete
2019-11-11	2019-11-11	Fotovoltaica	Energy infrastructures and installations	Mediana de Aragón	Aragón	SPAIN	Accepted	Unpublish	+	-	✖
2019-12-03	2019-12-03	Wind turbine in Fuentes de Ebro	Energy infrastructures and installations	Fuentes de Ebro	Sjælland	DENMARK	Accepted	Unpublish	+	-	✖
2019-02-05	2019-02-05	Biomass	Energy infrastructures and installations	Zaragoza	Aragón	SPAIN	Accepted	Unpublish	+	-	✖

ID	Date	Type	Description	Country	Sector	Info	Edit	Delete
3	2019-12-11	Advice	How to calculate the energy production of a solar panel?			+	-	✖
11	2019-05-13	Making Networking	foodforall			+	-	✖

✓ supporting the **decision-making** and **solution-finding** processes in industrial parks

Thank you!

Contact:

Andrea Kollmann

E-Mail: kollmann@energieinstitut-linz.at

Tel.: +43 732 2468 5660

Energieinstitut an der Johannes Kepler Universität

Linz

Altenbergerstraße 69

4040 Linz

Web: www.energieinstitut-linz.at



<http://sparcs-h2020.eu>

PV power plants on the premises of the Ennshafen port & park

- ❖ The local companies taken into consideration are all suited for the installation of PV plants with respect to high rates of self-consumption as well as competitive life-cycle-costs of electricity of the generated electricity.
- ❖ Financing through a joint power plant scheme provides a possibility to significantly reduce the amount of upfront equity capital necessary. Even though the 3%-interest rate provided to the investors is higher than the current Euribor interest rates, price discounts for joint purchase of all power plants might (partially) compensate the high interest rates along with non-financial benefits such as strengthening e.g. employee and local community ties.
- ❖ Following the positive results of the feasibility study, lack of legal impediments for the installation of the power plants as well as the environmental advantage of PV electricity over the average Austrian electricity prices, concrete price offers should be obtained, taking into consideration the local conditions for the installation of PV power plants as well as contacting potential (small private) investors and cooperation partners (e.g. vouchers for regional shopping) in order to set up a detailed financing scheme.

Shared e-mobility charging points

- ❖ The feasibility analysis of potential local installations of shared charging points show that shared charging points on company premises result in significant cumulative economic advantages over individual charging points and that they are competitive with charging rates offered by energy service companies or household electricity prices. Shared 22 kW (as opposed to 11 kW) charging points result in higher net present values.
- ❖ As no literature exists that addresses the recommended / reasonable number of charging stations depending on the number of electric vehicles in a fleet in detail, assumptions with respect to charging stations per electric vehicle were based on expert interviews. Given the crucial effects of the share of electric vehicles per charging point on the feasibility, it is necessary to fortify the empirical basis for determining this share (of electric vehicles per charging point) in the future in order to be able to fully evaluate the feasibility of installing (shared) electric vehicle charging points as well as determining the recommended / necessary number of charging points per EV. For individual companies or groups of companies, it therefore seems recommendable to start with small numbers of charging stations while at the same time providing room for installing additional ones in order to avoid extensive financial burdens.

Shore side electricity for port users

- ❖ The feasibility analysis for upgrading of shore side electricity installation in the port sections has been performed (existing system: 32 A, a short section with 63 A). Upgrading to a future-oriented infrastructure based on estimated demand needs minimum 125 A, some stations with power-lock-system (> 400 A). Investment will not be possible without funding. A master plan for the next decade has been established. The detailed engineering for the most urgent sections has been started.
- ❖ More details regarding the master planning for shore side electricity development on the Austrian Danube will be given in the next presentations.

The S-PARCS community and tool – interested users

How can you start an energy cooperation model?

S-PARCS Project will help you to start through different ways:

🌱 The S-PARCS Industrial Park Service Initial Assessment Tool (IAT)

Enables industrial parks and companies to find the best energy cooperation solution that fits your specific situation and the instruments to overcome the barriers that may face on the industrial energy cooperation process.

Do you need information?

I'm a park

or

I'm a company

🌱 The S-PARCS community tool

Will help you with the implementation of solutions. You will find the suitable **stakeholders** to support you to implement the solutions.

Stakeholder

You are a **stakeholder which can supply with financial, technical or legal advice** willing to **support** industrial parks towards energy cooperation

How can you start supporting industrial parks towards energy cooperation?

S-PARCS Project will help you to start through different ways:

🌱 The S-PARCS community tool

Will help you to find industrial parks needing support to implement energy cooperation solutions.

The S-PARCS community and tool

S-PARCS community and **initial assessment tool** are free online ICT tools

How can I start an energy cooperation model?



Welcome to the **S-PARCS community platform**, the **community for energy cooperation** within and between industrial parks.

Do you need general information about energy cooperation?

S-PARCS e-platform gives you this information:



What is energy cooperation?



Joint energy solutions



Barriers to energy cooperation and solutions

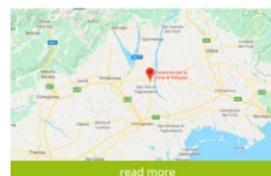


Business solutions for energy cooperation

Best practices



Do you want to be inspired by other **successful energy cooperation cases**?



Wastewater treatment plant with phytoremediation plant and solar



Rubí Brilla
Rubí (Catalunya, Spain)



Joint purchase of electricity - Spanish Foundry Association