

Challenge 1: Siemens ENERGY – Utilizing low-temperature waste heat for electricity and steam production

About the Company

Siemens Energy AG’s Division for Industrial Steam Turbines and Generators is headquartered in Görlitz. Siemens Energy manufactures industrial steam turbines at four main sites worldwide, which are delivered as generator turbine sets or mechanical drives. Controlled from Görlitz, more than 4,200 employees work on development, production, project management and sales, mainly at the sites in Brno, Czech Republic, Vadodara, India, and Jundai, Brazil. Siemens Energy’s knowledge, many years of experience in various industrial sectors, and close networking of its globally positioned division make it the Market and technology leader in the field of industrial power plants. The integration of the core product into industrial processes, especially in steam and heating processes, is a clear core competence and is the focus of the expertise.

Transformation Processes in the Industry

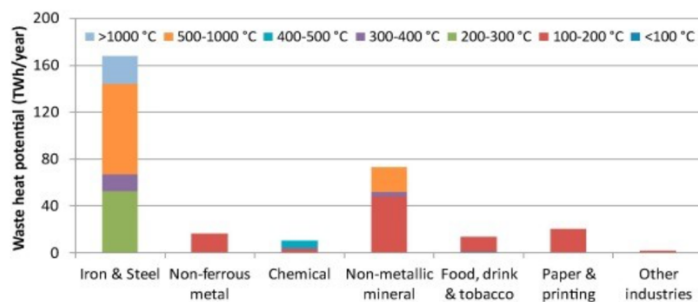
The transformation processes in the Industry are fostering a more sustainable business. Therefore, emissions during the operation of industrial plants but especially also during power production shall be reduced. We want to support enhancing energy efficiency at the factories of our customers by utilizing environmentally friendly technologies to generate electricity out of low-temperature waste heat sources. By this, we decrease fuel demands and save GHG emissions.

Challenges in these Transformation Processes

The main challenge is to identify approaches and solutions to utilize low-temperature waste heat sources for electricity production, ideally for steam production. Efficient conversion from heat to power is the key challenge because only a small temperature difference can be utilized. The proposed technologies should have reached a Technology Readiness Level of 6 or higher.

First Processes to Be Addressed

Depending on the industry sector, different waste heat sources can be utilized (as shown in the figure below).



Therefore, the following technical parameters should be reached:

- temperature level of 100°C-200°C
- Utilization of a thermal power of 1-50 MWth (or higher)
- Use of waste heat sources such as flue gas, hot water, hot air, saturated steam and other waste heat sources
- low operating and investment costs

Targeted benefits

Benefits will be, to improve our sustainability, to open up new markets for us and our partners, in the best case to get some economic advantages and to increase our energy efficiency. Therefore, we need partners and technology providers with the same mindset: Decarbonize the industrial sector to fight climate change and improve energy efficiency to reduce energy consumption and carbon dioxide emissions worldwide.

It would be very helpful if we could visit a demonstration plant. If you have built a demonstrator with a power output of 100kW or higher and you are searching for an industrial customer to build up a demonstrator at a higher power level (>1MW), please feel free to contact us.

Responsible Person

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Challenge 2: Siemens ENERGY – Identifying solutions for reliable energy supply for steam production

About the Company

Siemens Energy AG's Division for Industrial Steam Turbines and Generators is headquartered in Görlitz. Siemens Energy manufactures industrial steam turbines at four main sites worldwide, which are delivered as generator turbine sets or mechanical drives. Controlled from Görlitz, more than 4,200 employees work on development, production, project management and sales, mainly at the sites in Brno, Czech Republic, Vadodara, India, and Jundai, Brazil. Siemens Energy's knowledge, many years of experience in various industrial sectors and close networking of its globally positioned division make it the Market and technology leader in the field of industrial power plants. The integration of the core product into industrial processes, especially in steam and heating processes, is a clear core competence and is the focus of the expertise.

Transformation Processes in the Industry

The transformation processes in Siemens Energy are fostering a more sustainable business. Therefore, emissions during the operation of our products but especially also during the production shall be reduced. We want to decarbonize our factory by utilizing environmentally friendly technologies to cover our energy demands in the heat, electricity but also testing applications.

Challenges in these Transformation Processes

The main challenge is to identify finding approaches and solutions to ensure a reliable energy supply, especially for steam production. The steam should be generated by renewable energies. The technologies should be able to be integrated into our current steam supply.

We are analyzing potential technologies and possibilities for a combination of some technologies, to use for example sector coupling. The used technologies to solve the challenge shall be defined until 2025 and should have reached a Technology Readiness Level of 6 or higher.

First Processes to Be Addressed

In the first step, we want to apply the proposed or identified technology in our steam turbine testing center at our site in Goerlitz (Saxony, Germany).

The following technical parameters should be reached:

- temperature level of 200°C-400°C
- thermal power of 10-50 MWth (or higher)
- pressure level of 15-30 bara (or higher)
- Use only renewable energy sources
- In the best case no carbon dioxide emissions
- low operating and investment costs

Targeted benefits

Benefits will be, to improve our sustainability, to open up new markets for us and our partners, in the best case to get some economic advantages and to increase our energy efficiency. Therefore, we need partners and technology providers with the same mindset: Decarbonize the industrial sector to fight climate change and improve energy efficiency to reduce energy consumption and carbon dioxide emissions worldwide.

It would be very helpful if we could visit a demonstration plant. If you have built a demonstrator with a thermal output of 100kW or higher and you are searching for an industrial customer to build up a demonstrator at a higher power level (>1MWth), please feel free to contact us.

Responsible Person

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Challenge 3: Görlitzer Verkehrsbetriebe GmbH – New drive technologies for tram vehicles and autonomous driving

About the Company

Görlitzer Verkehrsbetriebe GmbH (GVB) is a company owned by the city of Görlitz. As a competent and customer-orientated service provider, we ensure attractive public transport and develop it further in the long term. GVB operates 7 bus and 2 tram lines and transports more than 10,000 passengers a day. GVB currently has more than 100 employees and is a member of the regional transport association ZVON.

Transformation Processes in the Company

Görlitzer Verkehrsbetriebe GmbH is currently implementing the so-called "Public Transport Model City Project". This project is being subsidised with around 70 million euros and involves the renewal of the transport infrastructure and the procurement of 8 new innovative trams.

Challenges in these Transformation Processes

The focus of the infrastructure topics includes accessibility, innovation and digitalisation. Furthermore, new drive technologies for tram vehicles and autonomous driving are to be tested.

Questions to Be Addressed

One sub-project deals with the topic of tram stops and main transport hubs. Depending on their importance, these stops are to be equipped with different features in terms of safety, passenger information, connectivity, and if necessary, entertainment etc..

The key word here is "SMART".

The task is to answer the following questions and develop ideas and implementation proposals.

- What does a "smart" tram stop in the city of Görlitz look like?
- What functions and benefits should it have?
- Who can deliver such smart solutions?

Targeted benefits

Definition of the term "SMART" in the context of the tram stops to be planned. Brief description of a role model tram stop at Wiesengrund in Görlitz.

Detailed description of proposed solutions and possible Suppliers.

Responsible Person

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Challenge 4: LEAG – Renewable energy vision

About the Company

LEAG (Lausitz Energie Bergbau AG, Lausitz Energie Kraftwerke AG, and Lausitz Energie Verwaltungs GmbH) is one of the largest private employers in the industrial sector of eastern Germany. It operates the second-largest lignite mining area in Germany, produces and supplies high-quality refined fuels to 21 countries, and operates state-of-the-art lignite power plants. The company employs approximately 7,000 people across 13 locations. LEAG aims to provide reliable, affordable, baseload-capable electricity to people in Germany, and in the future, it plans to achieve this through renewable energy sources, storage technologies, and innovative, low-emission generation capacities under the brand name GigawattFactory. By 2038, LEAG aims to have 7 GW of securely installed capacity characterized by its portfolio.

Transformation Processes in the Company

The transformation processes in LEAG involve transitioning from reliance on fossil fuels, particularly lignite, to renewable energy sources and innovative technologies. The company aims to integrate renewable energy, storage technologies, and low-emission generation capacities into its energy portfolio.

Challenges in these Transformation Processes

The main challenge is bridging the gap between energy demand and the availability of renewable energy sources such as wind and solar power. These sources currently have volatile availability and cannot meet the requirements for a secure energy supply. Overcoming this challenge involves finding approaches and solutions to ensure a reliable energy supply.

Possible Challenges

These challenges address the goal of achieving a reliable, affordable, and sustainable energy supply based on renewable energy sources and innovative technologies. International startup teams with expertise in these areas may offer valuable solutions and contribute to LEAG's transition towards a greener and more secure energy future.

1. How to install millions of PV modules cost- and work-efficiently?
2. How to store electric energy without the use of rare-earth elements?
3. Which renewable technologies are able to provide 24/7 reliable baseload? /
How to decouple wind and PV power from fluctuations?
4. How to provide warmth/heat from renewable sources for industry and municipalities? /
How can the heating infrastructure be further developed with regard to the integration of renewable energies?

Responsible Person

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Challenge 5: Europastadt GörlitzZgorzelec GmbH – Sustainable energy solutions for the Görlitz town hall

About the Company

Opened in 1910, the Stadthalle Görlitz is a unique art nouveau concert hall. Built for the Silesian Music Festival, it has been a symbol of Görlitz's up-and-coming society since its opening and has established itself as the city's cultural memory. It has been closed since 2004 and has only been used occasionally.

Transformation Processes in Society

After the building was only given emergency repairs in recent years, it is now to be extensively renovated and modernized between 2025 and 2028. The aim is to create a modern cultural and congress center for a variety of uses. Components include a large hall with up to 1,400 seats, two halls for 250 guests and several rooms for smaller events - each equipped with state-of-the-art event technology. A modern extension will be built to complement the existing building. In addition to the revitalization of a historically significant location, this will open up new development opportunities for the tourism location in the area of events and conferences, an opening for new target groups and more internationalization.

Challenges in these Transformation Processes

The conversion and future operation of the culture and convention center will take place under the guidelines of sustainability. The biggest challenge is to find sustainable energy solutions that support the operation of Stadthalle Görlitz without increasing its carbon footprint. The listed status of the building poses particular challenges. Energy generation opportunities that have not yet been investigated and exploited lie in the direct proximity to the River Neisse. Other larger facilities such as the Parkhotel Görlitz and the campus of the Zittau/Görlitz University of Applied Sciences are located in the immediate vicinity of the Stadthalle. . We are particularly interested in projects that use energy from the River Neisse and can be integrated into the existing infrastructure.

Targeted Benefits

Successful implementation of sustainable energy solutions is expected to improve sustainability, provide economic benefits and increase energy efficiency.

Responsible Person

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Challenge 6: Europastadt GörlitzZgorzelec GmbH – Autonomous energy generation for the future Deutsch-Ossig vacation village on Lake Berzdorf

About the Company

The town of Görlitz is an important and growing tourist destination in Upper Lusatia and Saxony. Lake Berzdorf is located right outside the city gates. In the past, lignite was mined in a scenic setting with fantastic views of the nearby mountains. After years of recultivation, the approximately 960-hectare lake now blends harmoniously into the landscape and there are already numerous offers for active recreation and relaxing vacations. Lake Berzdorf is also an exciting playing field for private investors to exploit existing development opportunities and realize their own projects.

Transformation Processes in the Company

Deutsch-Ossig, the "residual village" left over after lignite mining, is located directly on Lake Berzdorf. Plans envisage tourism development opportunities here in the areas of gastronomy, vacation apartments and guesthouses, with the majority of use in summer. However, infrastructural development is difficult. The initiative aims to establish a self-sufficient energy supply that promotes local tourism development, reduces the carbon footprint and is aligned with the city's sustainability goals. It is expected that this transformation process will improve the conditions for the construction and operation of existing and additional tourist facilities during the peak summer season.

Challenges in these transformation processes

The primary challenge is to develop and implement an autonomous energy generation system that meets the seasonal requirements of the tourism sector in Deutsch-Ossig while ensuring environmental sustainability and economic viability. We are particularly interested in technologies that enable a self-sufficient reliable and sustainable energy supply to support the development of tourism in Deutsch-Ossig.

Targeted benefits

Successful implementation of autonomous energy generation should open up new markets, provide economic benefits, increase energy efficiency and contribute to the city's sustainability efforts.

Responsible Person

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