Lighthouse project Waste Radiation heat to Power and Steam

Publieke samenvatting / Public summary

Aanleiding

This project evolves from the Heat 2 Power Noord Holland (H2P NH) initiative, which was set up by Ontwikkelbedrijf Noord Holland Noord (NHN) to look at possibilities to recover energy from heat at larger scales. The initiative is supported by Tata Steel, RGS Development, ENGIE and ECN. Tata Steel and RGS Development have proven the ThermagyTM Thermo Electric Generator (TEG) at RGS' lab, at Tata's lab and are working on a small scale pilot on site at Tata Steel to prove the 1 m2 scale. ENGIE is setting up a partnership with Qpinch to add their heat transformer technology to her portfolio of energy solutions.

Doelstelling

Tata Steel's objective is to improve its energy-efficiency by recovering radiation heat, that is lost today during the production process, and turn it in electricity and steam. Until now there were no ways to capture unavoidable radiation heat from industrial processes. Aside from making the Dutch industry significant more cost competitive and sustainable, both technologies offer new tools in the Dutch governmental toolbox to achieve her Renewable Energy Directive Targets of 2020 and 2030 towards mandatory CO2 reduction and improved energy-efficiency. The perspective of the rather unique combination of the Qpinch technology and the RGS Thermagy technology on a broader scale is to enable the recovery of up to 1,5% of the industrial energy losses of the energy intensive industries worldwide and reduce the CO2 emission

Projectinformatie / Project information

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Algemene informatie / General information

Penvoerder / Secretariat
ENGIE Services Nederland N.V.

Publicaties en materialen / Publications and attachments

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with the same percentage. For the Netherlands this would represent a total saving of 3,75 PJ, resulting into 3,75% of the total SET 2020 energy reduction objectives for the Netherlands of 100 PJ.

Korte omschrijving

The objective of the proposed Waste Radiation Heat to Power and Steam (WRAPS) project is to realize a full scale demonstration of the recovery of radiation waste from steel production into useable electricity and useful industrial steam. This is implemented by combining RGS Thermagy heat panels, converting radiation heat into electricity and cooling water, and a Qpinch heat transformer system, transforming cooling water into mid pressure steam to be injected back in the Tata Steel 15 bar-pressure steam-network. The system will convert a 2 MW radiation flow into 70 kW of electricity and 1 MW high quality steam – both suitable for a closed loop reuse by Tata Steel.

Resultaat

In general terms the project will prove the full system viability of the combined energy recovery solution, with respect to design aspects and, integration and operational aspects within the continuous production environment of a steel factory. This result will serve as a preparation for a role out implementation of the combined solution, within Tata Steel – as well as in other industries with similar – unused - heat sources. Generation of about 70kW of electricity and 1 MW of steam represent a CO2 saving of about 2000 ton/year. With the low gas and electricity prices the recurrent economic saving will be 250k€/year through avoided gas-burning and electricity generation.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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