

NEW ANNEX PROPOSAL

Industrial Electrification

For increased sustainability and flexibility in future smart energy grids

1. Introduction

a. Definition

Electrification of the Process Industry is the replacement of current fossil energy sources (coal, oil, gas) by renewable electricity. Electrification offers promising opportunities to significantly reduce the CO₂ footprint of industry and improve its competitiveness. At the same time, electrification of the industry can offer flexibility to electricity grids that need to balance increasing amounts of fluctuating renewable electricity..

b. Background

This annex was originally suggested as a basis for a Workshop at the 12th IEA Heat Pump Conference where experts from TCP-HPT and TCP-IETS discussed the potential of Electrification/Power2Heat. The starting point of the discussion was the role of (electrically driven) heat pumping technology in some industries in the Netherlands, namely for electrification and for increased flexibility of the renewable electricity supply.

However, electrification of industry has much wider applications than Power2Heat. Power2Gas and Power2Chemicals (storage options!), but also electrically driven separation processes are technologies that will be increasingly important for the decarbonisation of industrial energy supply while balancing of the renewable electricity grids. It is proposed that this Annex is based in the TCP-IETS and works closely with experts from other IEA TCP's:

- TCP-HPT - Heat Pumping Technologies,
- TCO- Hydrogen,
- TCP Energy Conservation through Energy Storage
- TCP International Smart Grid Action Network

2. Technical field and target groups

The Annex focuses on electrification technologies (Power2Heat, Power2Gas, Power2Chemicals, Power2Separate) and on technologies and systems to integrate renewable electricity into industrial processes (e.g. modelling, but also industrial utilities systems providers).

The target sectors of this Annex are:

- Process industries
- R&D
- Technology suppliers/ frontrunners
- Relevant governmental organizations.

3. Objectives and Scope

The main objective of the new Annex is the exchange and further development of knowledge in the area of industrial electrification. A “living” Roadmap will be developed for the effective acceleration of development and deployment of electrification technology. The roadmap will be based on the ongoing research, development and innovation in the participating member-states. To advance the field also initiating and executing shared development programs will be promoted, while the Annex will facilitate dissemination of the results.

4. Proposed approach

In the attached scheme the structure and key agenda items for the Annex Industrial Electrification is depicted. At the kick-off meeting on April 6th, 2018 this will be further elaborated and explored with the participating members to come to a fully supported proposal for the Annex strategic focus and work structure.

The scheme shows how in an interactive approach the Roadmap development, shared development programs and information platform will interact under operation of the Annex. The network of experts and stakeholders is key to the operation and success of the Annex and therefore depicted in the centre of the scheme.

Tasks:

To reach the common goals, 4 tasks are foreseen in the annex, linked as is shown in the picture

- **Task 1 – Energy Scenario’s & Policy**

Collect input from different Member States on available scenario’s and policy.
Identify relevant target sectors per region. Adjust scenario’s based upon results of the dynamic roadmap development activities

- **Task 2 –Roadmap 2050**

Develop and maintain a multi-year roadmap for technology development for industrial electrification.

- **Task 3 – Matchmaking and support for shared Development Programs**

Initiate and facilitate collaborative development of technology and associated business models.
Strive for Showcases/Demo Plants/ Field Labs

- **Task 4 – Information Platform**

Create a platform to collect, analyse and share information on electrification.

Connecting the different topics:

- Technology
- Scenario’s
- Policies
- Markets