Project No:
764697

Project acronym:
CHEERS

Project full title:
Chinese-European Emission-Reducing Solutions

Type of Action: **RIA**

Call/Topic:
European Horizon 2020 Work Programme 2016 – 2017, 10. 'Secure, Clean and Efficient Energy', under the low-carbon energy initiative LCE-29-2017: *CCS in Industry, including BioCCS*

Start-up: 2017-10-01
Duration: 60 months

Deliverable
D2.1 Basis of Design

Due submission date: 2018-04-30

Actual delivery date: 2018-04-15

Organisation name of lead beneficiary for this deliverable:
IFP Energies nouvelles

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Dissemination Level		
PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services and MOST)	X

Abstract for publication on the website of CHEERS

CHEERS conforms to the European Horizon 2020 Work Programme 2016 – 2017, 10. 'Secure, Clean and Efficient Energy', under the low-carbon energy initiative (LCE-29-2017: CCS in Industry, including BioCCS). The ambition is to improve the efficacy of CO_2 capture in industry, and help ensuring sustainable, secure, and affordable energy.

The action involves a 2nd generation chemical-looping technology tested and verified at laboratory scale (150 kWth). Within the framework of CHEERS, the core technology will be developed into a 3 MW_{th} system prototype for demonstration in an operational environment. This constitutes a major step towards large-scale decarbonisation of industry, offering a considerable potential for retrofitting industrial combustion processes.

The system prototype is based on a fundamentally new fuel-conversion process acquired from previous research and development actions over more than a decade. The system will include heat recovery steam generation with CO_2 separation and purification, and it will comply with industrial standards, specifications and safety regulations. Except for CO_2 compression work, the innovative concept is capable of removing 96% of the CO_2 while eliminating capture losses to almost zero.

The CHEERS project is financed by the European Union's Horizon 2020 research and innovation programme under grant agreement No 764697, and co-funded by the Chinese Ministry of Science and Technology (MOST).

CHEERS started from 1 October 2017 and is scheduled to end by September 2022. The estimated budget is 16 mill. EUR.

This Deliverable D2.1 concerns the synthesis of the data needed to start CHEERS pilot plant design studies. These shared data ensure that every project stakeholder will work with the same figures. It shall be updated as the project goes through engineering studies.

As the pilot plant design has evolved from a grass root pilot plant to a revamp of an existing pilot plant, this document also includes key specifications of the existing unit. The actual power of CHEERS pilot plant will be determined by the size of the existing pilot plant and is likely to be higher than the originally planned 3 MW_{th}, according to the final choices that will be made on revamp philosophy.