



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: 72 months

### **Deliverable D4.3: Procurement package of fuel and air reactors**

Due submission date: 2021-06-30

**Actual delivery date: 2021-06-03**

Organisation name of lead beneficiary for this deliverable:  
TOTAL

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

#### 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<sub>2</sub> capture in industry, and help ensuring sustainable, secure, and affordable energy.

The action involves a 2<sup>nd</sup> 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 MWth 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 synthesised from prior research and development actions over more than a decade. The system will include heat recovery steam generation with CO<sub>2</sub> separation and purification, and it will comply with industrial standards, specifications and safety regulations. Except for CO<sub>2</sub> compression work, the innovative concept is capable of removing 96% of the CO<sub>2</sub> 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).

The deliverable D4.3 reports the activities carried out under Task 4.3 of CHEERS project. This task was focussed on the design and preparation of requisition package for the Long Lead items which are essentially Fuel and Air reactors and interconnecting refactorized lines. A study was carried out on the conceptual design of refractory materials and material selection for those items. The results from thermochemical study are reported in the first section as basis for material selection which is briefly reported in second section. Requisition package content and samples of some key deliverables are reported in the third section of this report which are extracted from the full package. Finally, the requisition package for the refractory coupons is briefly introduced and shared in this report.