

Development of a CFD code for the design of desulphurizing equipment

The project will be to address the issues of technological process of flue gas desulphurization by the past-boiler wet limestone wash-out procedure used in coal-fired power plants. During the desulphurization process a calcite suspension and water react together while transforming into the gypsum and pure gas. The entire desulphurization process depends on numerous parameters. Currently, there exists no approach that would enable to design a high-efficient facility. Therefore the initial settings of most of the equipment do not meet the required parameters, which are mainly detected by the exit emission volume, or the facilities show a low efficiency due to the set high suspension flow rate. The objective of this projects is to design an actual CFD code for the desulphurization process simulation. Such code would enable to describe this process, medium balance within the desulphurization reaction and to design a methodology of the most effective deployment of the inner technological elements (nozzles, drop baghouse etc.) in the absorber for different situations, to determine the drop size in the suspension, to decrease the pressure loss within the absorber to increase the intensity of the desulphurization process. The results of the CFD code, that would be developed during this project, will help to decrease the emission limits of SO₂, NO_x and TZL - the compounds of which a significant decrease is required by the EU. Within this project an experimental track line will be designed and built as well. The results of the measurements conducted at this facility will be used as an input/initial condition into the CFD code.

Code	TA04021338
State providing funder	Technology Agency of the Czech Republic https://www.tacr.cz/en/homepage/
Programme	ALFA Programme (2011-2016) https://www.tacr.cz/en/alfa-programme/
Total eligible costs	15 981 000 CZK
Total project subsidy	10 684 000 CZK
Subsidy FME TUL	4 863 000 CZK
TUL internal number	17855
Contractor	DIZ Bohemia s.r.o.
Project participant	TUL, Faculty of Mechanical Engineering
Principal investigator	doc. Ing. Tomáš Vít, Ph.D.
Department	Department of Power Engineering Equipment http://www.fs.tul.cz/en/construction/energy-equipment/research-and-innovations/
Period	2014-2017

<https://www.rvvi.cz/cep?s=jednoduche-vyhledavani&ss=detail&n=0&h=TA04021338>

Costs (year)	2014	2015	2016	2017	Total
Non-investment (CZK)	615 000	1 518 000	1 445 000	1 285 000	4 863 000
Investment (CZK)	0	0	0	0	0
Total	615 000	1 518 000	1 445 000	1 285 000	4 863 000

Project results [EN](#)

2015	Article	RIV/46747885:24210/15:00002485
2016	Articla	RIV/46747885:24210/16:00000624
2016	Article	RIV/46747885:24210/16:00000972

2017	Article	RIV/46747885:24210/17:00004346
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