**An applied research concerned on the increase of the thermal efficiency of the heat exchanger and confirmation of the service conditions in relation to the renewable energy sources**

The objective of the proposal project is design of the new construction of the heat exchanger used in the heating-cooling units. The aim of the study is reaching the maximal thermal efficiency and to extend the possible application of the new constructed heating-cooling units in the field of the renewable energy resources. Because of the wide range of the thermal differences between output and input of the heating/cooling medium improved the position of the new product in the trade in the frame of EU countries or outside. The research activities will be composed by the theoretical numerical examination of the first proposal technical solution, the parameters such as thermal efficiency etc. will be confirmed by a experimental measurement in the new particular designed lab. For production purpose, the new heating/cooling units will be documented in the technical documentation including production documentation and technical parameters of the new heating/cooling units.

| | |
|---|---|
| Code | TA01020231 |
| 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 | 13 678 000 CZK |
| Total project subsidy | 10 543 000 CZK |
| Subsidy FME TUL | 6 003 000 CZK |
| TUL project number | 14020 |
| Contractor | TUL, Faculty of Mechanical Engineering |
| Project participant | LICON HEAT s.r.o. https://licon-heat.com/ |
| Principal investigator TUL | doc. Ing. Karel Fraňa, Ph.D. |
| Department | Department of Power Engineering Equipment |
| Period | 2011-2014 |

CZ https://www.rvvi.cz/cep?s=jednoduche-vyhledavani&ss=detail&n=0&h=TA01020231

| **Costs (year) TUL** | 2011 | 2012 | 2013 | 2014 | Total |
|---|---|---|---|---|---|
| Non-investment (CZK) | 1 975 000 | 1 963 000 | 1 474 000 | 471 000 | 5 883 000 |
| Investment (CZK) | 120 000 | 0 | 0 | 0 | 120 000 |
| **Total (CZK) TUL** | 2 095 000 | 1 963 000 | 1 474 000 | 471 000 | 6 003 000 |

**Project results** EN

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|---|---|---|
| 2011 | | RIV/46747885:_____/11:#0000479 |
| 2011 | | RIV/46747885:_____/11:#0000480 |
| 2011 | | RIV/46747885:_____/11:#0000481 |
| 2011 | | RIV/46747885:_____/11:#0000482 |
| 2011 | | RIV/46747885:24210/11:#0002390 |
| 2011 | | RIV/46747885:24210/11:#0002391 |
| 2011 | | RIV/46747885:24210/11:#0002398 |
| 2011 | | RIV/46747885:24210/11:#0002415 |
| 2012 | | RIV/46747885:24210/12:#0002680 |

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|---|---|---|
| 2012 | | RIV/46747885:24210/12:#0002681 |
| 2012 | | RIV/46747885:24210/12:#0002684 |
| 2012 | | RIV/46747885:24210/12:#0002685 |
| 2012 | | RIV/46747885:24210/12:#0002686 |
| 2012 | | RIV/46747885:24210/12:#0002687 |
| 2012 | | RIV/46747885:24210/12:#0002688 |
| 2012 | | RIV/46747885:24210/12:#0002689 |
| 2012 | | RIV/46747885:24210/12:#0004353 |
| 2012 | | RIV/46747885:24210/13:#0004297 |
| 2013 | | RIV/46747885:24210/13:#0004304 |
| 2013 | | RIV/46747885:24210/13:#0004334 |
| 2013 | | RIV/46747885:24210/13:#0004336 |
| 2013 | | RIV/46747885:24210/13:#0005548 |
| 2012 | | RIV/46747885:24210/13:#0005555 |
| 2013 | | RIV/46747885:24210/14:#0006306 |
| 2014 | | RIV/46747885:24210/14:#0006317 |
| 2014 | | RIV/46747885:24210/14:00000343 |
| 2012 | | RIV/46747885:24620/12:#0000045 |
| 2012 | | RIV/46747885:24620/12:#0000398 |
| 2012 | | RIV/60462183:_____/12:#0000001 |
| 2012 | | RIV/60462183:_____/12:#0000002 |