Bertil Wahlund, Programme manager
Phone +46 8 677 27 52
Mail: bertil.wahlund@energiforsk.se

# Invitation to KME-programme board meeting no 2/18

| | | |
|---|---|---|
| **To**: | Erik Skog (chairperson) | Erik Skog AB |
| | Sebastian Kaiser | Andritz |
| | Christoph Gruber | Andritz |
| | Thomas Norman | Babcock & Wilcox Vølund |
| | Lars Mikkelsen | Babcock & Wilcox Vølund |
| | Søren Aakjær Jensen | Ørsted |
| | Anna Jonasson | E.ON Energilösningar |
| | Erik Dahlén | Stockholm Exergi |
| | Jukka Meskanen | Fortum |
| | Edgardo Coda | Sumitomo SHI FW |
| | Vesna Barišić | Sumitomo SHI FW |
| | Andreas Borg | GKN Aerospace |
| | Matti Huhtakangas | MH Engineering |
| | Bo Jönsson | Kanthal Sandvik |
| | Dilip Chandrasekaran | Kanthal Sandvik |
| | Jesper Ederth | Sandvik Materials Technology |
| | Marie-Aude Porter | Siemens IT |
| | Annika Stålenheim | Vattenfall |
| | Pamela Henderson | Vattenfall |

Adj members

| | | |
|---|---|---|
| | Johan Moverare | Linköpings universitet |
| | Rikard Norling | Swerea KIMAB |
| | Jan-Erik Svensson | Chalmers |
| | Bertil Wahlund (secr) | Energiforsk |

**Date and time**: May 16, 09.00-11.30 (Swedish time).

**Place**: Telephone, +46 8-677 25 60, code 54030#

*Please e-mail to bertil.wahlund@energiforsk.se if you are prevented from attending the meeting.*

**Agenda proposal board meeting no 2/18** Annex

**1 Agenda**

**2 Elections of person to approve minutes**

**3 Minutes from board meeting 1/18** 1
Also on web site.

**4 Notifications**

**4.1 Coming dissertations**

**4.2 Coming conferences**

**5 Budget** 2
Budget follow up.

**6 Approval of final project reports** 3
Evaluation and approval of final project reports. List of projects and reports in annex 3. Reports available on member pages at KME website: http://www.energiforsk.se/program/kme/member-area/project-descriptions-status-reports-and-final-reports/

**6.1 KME-701, Influence of high-temperature environments on the mechanical behaviours of high-temperature austenitic stainless steels**
Project leader: Mattias Calmunger, LiU
Industry partners: Sandvik MT, Kanthal

**6.2 KME-702, LCF and TMF crack growth in cast nickel-based superalloys**
Project leader: Johan Moverare, LiU
Industry partner: Siemens IT

**6.3 KME-703/713, Durable MCrAlX Coatings for demanding applications in gasturbines**
Project leader: Ru Peng, Linköping university
Industry partner: Siemens IT

**6.4 KME-705, MoSi2 matrix composites for combustion components exposed to high temperature oxidation and hot corrosion**
Project leader: Yiming Yao, Chalmers
Industry partner: Kanthal

**6.5 KME-707, Improved Steam Turbine Design for Optimum Efficiency and Reduced Cost of Owership**
Project leader: Magnus Genrup, Lund university
Industry partner: Siemens IT

**6.6 KME-709, Increased steam temperature in grate fired boilers – Steamboost**
Project leader: Torbjörn Jonsson, Chalmers, HTC
Industry partners: B&W Völund, Kanthal, Sandvik MT and Göteborg energi

**6.7 KME-710, Design of a new generation of 12% chromium steels**
Project leader: Fang Liu, Chalmers
Industry partner: Siemens IT

**6.8 KME-711, Combating superheater corrosion by new materials and testing procedures - Corrosion exposures in the waste fired CFB boiler P15 at Händelö**
Project leader: Jesper Liske, Chalmers, HTC
Industry partners: E.ON, Sumitomo, Kanthal, Sandvik MT, MH Enginering, Stockholm Exergi, and Mälarenergi, Göteborg energi, Söderenergi

**6.9 KME-714, Sulfur recirculation and improved material selection for high temperature corrosion abatement – Investigating different aspects of corrosion memory**
Project leader: Torbjörn Jonsson, Chalmers, HTC
Industry partners: B&W Völund, Götaverken Miljö, Ørsted, and Göteborg Energi

**6.10 KME-715, Composite Metal Polymer (CMP) for non-stick improvements in CHP plants**
Project leader: Rikard Norling, Swerea KIMAB/Matti Hutakangas, MH Engineering
Industry partners: MH Engineering, Ørsted, Öresundskraft

**6.11 KME-717, Boiler corrosion at lower temperatures – influence of lead, zink and chlorides**
Project leader: Rikard Norling, Swerea KIMAB
Industry partners: Vattenfall, Andritz, Stockholm Exergi

**6.12 KME-718, High temperature corrosion in used-wood fired boilers – fuel additives and coatings**
Project leader: Rikard Norling, Swerea KIMAB
Industry partners: Sumitomo, Andritz, E.ON, Stockholm Exergi, MH Engineering, Sandvik Heating Technology, Sandvik Materials Technology, Vattenfall AB

**6.13 KME-720, The effect of increased fractions of waste wood on water wall- and superheater corrosion - Combating corrosion by new materials and improved material selection**
Project leader: Jesper Liske, Chalmers, HTC
Industry partners: Kanthal, Sandvik MT, Sumitomo, MH Engineering, and Kraftringen

**Ongoing projects, finalised 2018-06-30:**

**KME-706, Weldability of nickel-base superalloys for energy applications**
Project leader: Lars Nyborg, Chalmers
Industry partner: GKN Aerospace

**KME-719, Development of weldability assessment and understanding of hot cracking in boiler and gas turbine materials**
Project leader: Lars Nyborg, Chalmers
Industry partner: GKN Aerospace

**7 Programme conference HTC/KME 2018**
Feedback.

**8 Others**

**9 Next meetings**

- Additional meeting for finalising the programme period to be decided

- Tentative start-up meeting of new period in June

Stockholm as above
Bertil Wahlund

# Consortium Materials technology for thermal energy processes – minutes board meeting no 1/18

| | | |
|---|---|---|
| **Date** | March 2, meeting time 13.00-15.00 | |
| **Place** | Telephone meeting | |
| **Participants** | Erik Skog (chair) | Erik Skog AB |
| | Anna Jonasson | E.ON Energilösningar |
| | Bengt-Åke Andersson | E.ON Energilösningar |
| | Bo Jönsson | Kanthal |
| | Eva-Katrin Lindman | Stockholm Exergi (fd Fortum värme) |
| | Vesna Barišić | Sumitomo SHI FW (SFW) |
| | Pamela Henderson | Vattenfall |
| | Søren Aakjær Jensen | Ørsted (Dong Energy) |
| | Hanna Kinnunen | Valmet (new stakeholder) |
| | Thomas Höjer | Calderys (new stakeholder) |
| | Owe Mårs | Höganäs (new stakeholder) |
| | Jan-Erik Svensson | Chalmers |
| | Bertil Wahlund (secr.) | Energiforsk |
| **Prevented** | Andreas Borg | GKN Aerospace |
| | Lars Mikkelsen | B&W Vølund |
| | Dilip Chandrasekaran | Kanthal/Sandvik Heating Technology |
| | Marie-Aude Porter | Siemens |
| | Matti Huhtakangas | MH Engineering |
| | Erik Dahlén | Stockholm Exergi (fd Fortum värme) |
| | Jukka Meskanen | Fortum |
| | Annika Stålenheim | Vattenfall |
| | Edgardo Coda | Sumitomo FW |
| | Thomas Norman | B&W Vølund |
| | Jesper Ederth | Sandvik Materials Technology |
| | Christoph Gruber | Andritz |
| | Sebastian Kaiser | Andritz |
| | Johan Moverare | Linköpings universitet |
| | Rikard Norling | Swerea KIMAB |
| **Distribution** | participants, prevented and | |
| | Sven Andersson | B&W Vølund/Götaverken |
| | Per Kallner | Vattenfall |
| | Andreas Sundlöf | Söderenergi |
| | Erik Westman | Söderenergi |
| | Heike Martinsson | Söderenergi |
| | Henrik Lindståhl | Tekniska verken i Linköping AB |
| | Mikael Fransson | Tekniska verken i Linköping AB |
| | Ulf Hagman | Göteborg Energi AB |
| | Erika Antonsson | Göteborg Energi AB |
| | Toni Holkko | Gävle Energi |
| | Lucas Enström | Gävle Energi |
| | Ulf Lindqvist | Jämtkraft AB |
| | Dag Wiklund | Jämtkraft AB |
| | Jesper Baaring | Öresundskraft |
| | Johan Thelander | Karlstads Energi AB |
| | Magnus Eriksson | Mälarenergi AB |
| | Per Tunberg | Mälarenergi AB |
| | Patrik Schneider | Kraftringen |
| | Jasmin Aspen | Kraftringen |
| | Erik Thornström | Swedenergy |

## 1 Agenda

The distributed agenda was approved.

## 2 Person to approve minutes

BJ was elected to approve minutes (next present person/company on participants list).

## 3 Minutes from board meeting 4/17

The minutes from board meeting 4/17 was approved with the following comments:

- A meeting with project leaders has been held with the aim to discuss and analyse the call text and possible strategy with applications.
- The KME future group was assembled to discuss the next period, report on item 7.

## 4 Notifications

### 4.1 Coming dissertations

Upcoming dissertations

-

Recently defended dissertations

Nooshin Mortazavi, Title of PhD thesis: *Novel Insights into the Oxidation of High Temperature Alloys - The Role of Environment, Microstructure and Reactive Elements*, December 21, Chalmers

### 4.2 Coming conferences and workshops

KME/HTC programme conference 2018, March 20-21, Stockholm, discussed further at item 8. Programme: http://www.energiforsk.se/konferenser/kommande/kme-htc-research-symposium-2018/programme/

Boiler days (Panndagarna, Värme- och Kraftföreningen), April 17-18, Örebro

The 27th International Conference on the Impact of Fuel Quality on Power Production and the Environment, September 24–28, 2018, Lake Louise, Canada. http://blogs2.abo.fi/fuelqualityimpact/

High Temperature Corrosion under Complex Conditions, Deposits, and Salts: Towards Greener Energy, September 26-29 2018, Dechema, Frankfurt, Germany.

## 5 Budget

BW showed the updated budget follow. Follow up is made of funds used, requested cash and reported in-kind. The reporting follows the plan in most cases and two projects reports in-kind contribution over 100 %. Updated budget in annex 1.

In the following projects deviations from plans are identified:

- KME-717, *Boiler corrosion at lower temperatures – influence of lead, zink and chlorides*, low industry in-kind contribution. Project leader RN check the status at the industries. BW provide figures on up to now reported in-kind and contact the industries.

- KME-720, *The effect of increased fractions of waste wood on water wall- and superheater corrosion*, low industry in-kind contribution due to the previously reported incident with a water wall probe. The low in-kind has resulted in a deficit at Chalmers (approx 1 MESK). Discussions is ongoing on how to solve the issue. One possibility to reduce the deficit could be that companies allocate in-kind to KME-720 from other projects reaching over 100 % in-kind.

A reminder about the last reporting date for industry in-kind:

- Report in kind contribution up to April 15.

## 6 Follow up of project

Final project reports will be evaluated and approved by board in coming meetings.

KME-720, *The effect of increased fractions of waste wood on water wall- and superheater corrosion*, faced as reported problems with water wall probe. Economics discussed above in item 5.

Finalised projects:

- KME-707, *Improved Steam Turbine Design for Optimum Efficiency and Reduced Cost of Owership*
- KME-708, *High temperature corrosion in used-wood fired boilers*

## 7 Next KME programme 2018-2021

BW updated regarding the status of the planning for the new programme and reported from KME future group meeting held February 1.

As informed at previous meetings, there are two parallel processes, one for respective Energy Agency programme from which KME will apply research grants; *Steam based processes,* from now called *Biopower,* and *Turbines for future technologies*.

*Turbines for future technologies*

The programme *Turbines for future technologies* is already ongoing. KME has conducted a dialogue with SEA on when materials technology research could be included in the programme. SEA's original plan was to open for materials research towards end 2018/beginning 2019 in a third call, which is too late for KME. Result of the dialogue so far:

- SEA now plans to open a call after summer
- The four ongoing gas turbine-related KME projects with PhD students (KME-702, KME-703, KME-706, KME-719), were welcomed to submit applications for funding to finalisation outside the SEA calls and programmes. These applications were submitted end of January. The applications include common KME texts and a coordination budget for KME/Energiforsk. Decisions are expected during the spring.

*Biopower – thermal conversion of biofuel to power and heat (previously called Steam based process)*

SEA has allocated 87 MSEK state matching funds over the years 2018-2021 to the programme (state matching funds in current KME projects in the area steam based process amounts to approx. 25 MSEK). Materials technology is one of six areas. The general programme goals correlates well with KME's

interest: fuel flexibility, operating flexibility, power yield and availability for biofuel and waste. Besides, collaboration and continuous knowledge exchange between industry, institutes and academy in the same branch and companies in different parts of the value chain, is one of the main programme goals and encouraged.

In the first call, opened late 2017 and with March 15 as due date, new information and conditions aroused: maximum project budget 12 MSEK and expected project budget 2-5 MSEK.

*Report from KME future group*

The KME future group concluded that the KME consortium should be maintained, and the industry is recommended to form a KME consortium for the coming period.

The KME consortium is an important forum for networking and collaboration that includes well-established routines for IPR, information exchange, results dissemination (incl the KME/HTC conference). The network of companies over the value chain and researchers is a key factor for creation of relevant research projects. KME/Energiforsk will besides provide for dialogue and give input to SEA regarding industry relevant research.

The industry can participate as in previous periods, with cash for running the consortium and with in-kind in projects, via a consortium agreement and specific project agreements.

Due to the new prerequisites in call, the future group recommend KME to change strategy and instead of larger consortium applications with packages of projects, elaborate and submit separate and specific KME project applications. The respective project leader is responsible to submit the project to SEA and the applications should include:

a) common KME texts showing that the resp. project is a part of KME. BW responsible to elaborate the text.

b) a budget for KME/Energiforsk for results dissemination and communication from the project. Energiforsk will contribute with industry cash to be matched by the SEA.

Projects approved by the SEA, and other financing bodies later on, will be coordinated by KME and make up the KME-project portfolio.

Comments from board:

- The KME text to be included in the applications should be further elaborated. Results dissemination is a good word to use, while administration should be avoided. BW distribute the text to board and project leaders for comments.
- Need to allocate a "management budget" to each project, that is matched by SEA.
- In coming programme period, the collaboration should be further developed, for example with workshops on specific items or topics.
- Great advantages with access to the entire value chain, and the possibility to connect the activities through it. We need to maintain the dialogue within the value chain.
- The new features compared to current period is manly that the applications are to be submitted in larger programme calls, which gives larger uncertainties on which projects will be approved.

- Approved projects will as in current period get a decision from SEA, and a project agreement to regulate IPR, confidentiality, undertakings etc, will have to be written.
- It was discussed how the programme management could be financed. Board assume similar level as before on the respective companies' cash contribution to programme management. Some companies have already accepted the offer, while some other find it easier to contribute with cash in each project. Discussion and negotiations will continue during the spring.

### 7.1 Project proposals to programme

Seven new KME projects under development, to be submitted in the *Biokraft* call:

- *Increased fuel flexibility and performance for boilers with challenging fuels*
  Proposal from Swerea KIMAB as project leader and with Mälarenergi, Valmet, EON, Vattenfall, Sthlm Exergi, Falun, Sandvik/Kanthal, MH Engineering, Calderys as project partners
- *New materials and Oxygen Carrier Aided Combustion for improved competitiveness of FB plants using renewable fuels (previously called Materials development towards loop seal and water wall corrosion)*
  Proposal from Chalmers/HTC as project leader and with EON, Sumitomo FW, Sandvik/Kanthal, Sandvik MT, MH Engineering, Stockholm Exergi as project partners.
- *Increased flexibility and power-production from biomass through material development and corrosion prediction*
  Proposal from Chalmers/HTC as project leader and with Ørsted Sandvik/Kanthal, Sandvik MT and Valmet as project partners.
- *High performance coatings to combat erosion-driven damage in power plants*
  Proposal from Chalmers and Högskolan Väst, with Höganäs, Mälarenergi and MH Engineering as project partners.
- *Heavy section austenitic stainless steel for the future header and piping material in high-efficient biomass-fired power plants (previously called Thick-walled austenitic stainless steel for the future header and piping material in high-efficient biomass-fired power plants)*
  Proposal from LiU as project leader with Sandvik MT (main partner) and Sumitomo Foster Wheeler as project partners. The project is a continuation and extension of KME-701.
- *Design of a new generation of 12 % chromium steels*
  Proposal from Chalmers as project leader with Siemens as project partner. The project is a continuation of KME-710.
- *FlexBalans,* Proposal from Lund and KTH. No industrial partners but topics could be connected to the research and industry.

A further initiative elaborated outside KME but with connections to KME:

- *Total fuel cost – a calculation tool*. Broad initiative by Energiforsk, covering KME and Värmeforsk/SEBRA. The goal is to create a calculation tool for calculation of the total fuel cost of a specific fuel in a specific plant.

## 8 Programme conference HTC/KME

The 2018 conference will be held **March 20-21, 2018**, at Spårvagnshallarna, Stockholm. Programme http://www.energiforsk.se/konferenser/kommande/kme-htc-research-symposium-2018/programme/. Please distribute and invite colleagues.

Comments:

- It was proposed to invite SEA to give a talk.

## 9 Others

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## 10 Next meetings

2018 meetings. Tentative plan, doodle polls will be distributed to set the dates:

- Mid April, telephone, board meeting to conclude the current period, first round to revise and approve final project reports
- May/June, physical meeting, Stockholm, start-up meeting of new KME period (tentatively be held same day as HTC board, aim to synchronise with HTC).

2018 conference

- KME/HTC programme conference 2018, March 20-21, Stockholm

Minutes by

Bertil Wahlund

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|---|---|
| Minutes approval | Minutes approval |
| Bo Jönsson, Kanthal | Erik Skog, chairperson |

**Annex 2** 2018-05-04

## Projects

**Budget follow up, total costs**

| Programme budget [kSEK] | Programme and project financing | | | | | Funds used, kSEK | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | SEA | % | Industrv | | Cash SEA, req | | Industry total | | |
| | | | | | | kSEK | % | In-kinds | cash | % |
| For projects | 115 000 | 46 000 | 40,0% | 69 000 | | | | | | |
| Programme management | 8 950 | 3 800 | 42,5% | 5 150 | | | | | | |
| **Sum:** | **123 950** | **49 800** | **40,2%** | **74 150** | | | | | | |
| **Decided projects** | | | | | | | | | | |
| KME-701 (39297-1) | 7 180 | 2 872 | 40,0% | 4 308 | | 2224 | 77% | 4124 | | 96% |
| KME-702 (39279-1) | 14 435 | 5 735 | 39,7% | 8 700 | | 5162 | 90% | 8791 | | 101% |
| KME-703 (39296-1) | 5 447 | 2 167 | 39,8% | 3 280 | | 2167 | 100% | 3280 | | 100% |
| KME-705 (39298-1) | 1 000 | 400 | 40,0% | 600 | | 351 | 88% | 593 | | 99% |
| KME-706 (39283-1) | 12 500 | 5 000 | 40,0% | 7 500 | | 2873 | 57% | 5828 | | 78% |
| KME-707 (39281-1) | 7 238 | 2 895 | 40,0% | 4 343 | | 2436 | 84% | 3692 | | 85% |
| KME-708 (39270-1) | 7 383 | 2 963 | 40,1% | 4 420 | | 2963 | 100% | 4849 | 15 | 110% |
| KME-709 (39287-1) | 10 612 | 4 245 | 40,0% | 6 367 | | 3643 | 86% | 5950 | 23 | 94% |
| KME-710 (39286-1) | 2 000 | 800 | 40,0% | 1 200 | | 700 | 88% | 1137 | | 95% |
| KME-711 (39299-1) | 12 460 | 4 984 | 40,0% | 7 476 | | 3928 | 79% | 6826 | 627 | 100% |
| KME-713 (40038-1) | 2 400 | 960 | 40,0% | 1 440 | | 828 | 86% | 189 | | 13% |
| KME-714 (40118-1) | 7 590 | 3 036 | 40,0% | 4 554 | | 1932 | 64% | 3570 | 76 | 80% |
| KME-715 (40040-1) | 2 361 | 944 | 40,0% | 1 417 | | 518 | 55% | 1398 | | 99% |
| KME-717 (40892-1) | 4 491 | 1 796 | 40,0% | 2 695 | | 1170 | 65% | 2047 | | 76% |
| KME-718 (41515-1) | 2 633 | 1 053 | 40,0% | 1 580 | | 261 | 25% | 1522 | | 96% |
| KME-719 (40893-1) | 9 102 | 3 500 | 38,5% | 5 602 | | 2451 | 70% | 3800 | | 68% |
| KME-720 (41048-1) | 5 205 | 2 082 | 40,0% | 3 123 | | 658 | 32% | 1301 | 152 | 47% |
| Programme management, tot | 8 950 | 3 800 | 42,5% | 5 150 | | 3686 | 97% | 3649 | | 71% |
| **Tot. for projects:** | **114 037** | **45 433** | 39,8% | **68 605** | Proj: | **34264** | **75%** | **58895** | **####** | **87%** |
| **Remaining budget:** | **963** | **567** | **58,9%** | **396** | Mgmt: | **3 686** | | **3649** | | |
| **Share decided, %** | **99,2%** | **98,8%** | | **99,4%** | | | | | | |
| **Share remaining budget, %** | **0,8%** | **1,2%** | | **0,6%** | | | | | | |

**KME Projects 2014-2018**

2018-05-03

| KME project | Title | Perfomed by | Project manager | Industry partners | Project reference group | Board decision | Comment |
|---|---|---|---|---|---|---|---|
| KME-701 | Influence of high-temperature environments on the mechanical behaviours of high-temperature austenitic stainless steels | Linköping university | Mattias Calmunger | Sandvik MT, Sandvik HT | Bo Jönsson Sandvik HT, Edgardo Coda Sumitomo and Rikard Norling Swerea KIMAB | | Short report sumitted to SEA and published as Energiforsk report. |
| KME-702 | LCF and TMF crack growth in cast nickel-based superalloys | Linköping university | Johan Moverare | Siemens IT | Rikard Norling Swerea KIMAB, Magnus Hörnqvist GKN | | Short report sumitted to SEA and published as Energiforsk report. |
| KME-703 (extension KME-713) | Durable MCrAlX Coatings for demanding applications in gasturbines | Linköping university | Ru Peng | Siemens IT | Rikard Norling Swerea KIMAB and Bo Jönsson SHT | | Short report will be sumitted to SEA and published as Energiforsk report. |
| KME-705 | MoSi2 matrix composites for combustion components exposed to high temperature oxidation and hot corrosion | Chalmers | Yiming Yao | Sandvik HT | Xing Hai-Li Siemens IT | | Short report will be sumitted to SEA and published as Energiforsk report. |
| KME-706 | Weldability of nickel-base superalloys for energy applications | Chalmers | Lars Nyborg | GKN Aerospace | Erik Zackrisson, Siemens IT | | Project extended to 2018-06-30 |
| KME-707 | Improved Steam Turbine Design for Optimum Efficiency and Reduced Cost of Owership | Lund university | Magnus Genrup | Siemens IT | | | Combined report with KME-720. KME report to be sumitted to SEA, should be marked as confidential |
| KME-708 | High temperature corrosion in waste-wood fired boilers. Part 1 | KTH, Swerea KIMAB and SP | Pamela Henderson, Vattenfall | Vattenfall, Sandvik HT, Sandvik MT, Stockholm Exergi, E.ON, Sumitomo, and Göteborg energi via Energiforsk | Tomas Norman Vølund, Christoph Gruber Andritz and Jesper Liske HTC/Chalmers | Approved (at earlier board meetiing) | Project finalised and report approved<br>Short report sumitted to SEA and published as Energiforsk report. |
| KME-709 | Increased steam temperature in grate fired boilers - Steamboost | Chalmers, HTC | Torbjörn Jonsson | B&W Völund, Sandvik HT, Sandvik MT and Göteborg energi via Energiforsk | Bengt-Åke Andersson or Mats Åbjörnsson E.ON, Rikard Norling Swerea KIMAB, Christoph Gruber Andritz, Edgardo Coda Sumitomo and Annika Stålenheim or Pamela Henderson Vattenfall | | KME report sumitted to SEA, should be marked as confidential |
| KME-710 | Design of a new generation of 12% chromium steels | Chalmers | Fang Liu | Siemens IT | Bo Jönsson Sandvik HT | | KME report sumitted to SEA, should eventualy be marked as confidential |
| KME-711 | Combating superheater corrosion by new materials and testing procedures - Corrosion exposures in the waste fired CFB boiler P15 at Händelö | Chalmers, HTC | Jesper Liske | E.ON, Sumitomo, Sandvik HT, Sandvik MT, MH Enginnering, Stockholm Exergi, and Mälarenergi, Göteborg energi, Söderenergi via Energiforsk | Annika Stålenheim or Pamela Henderson Vattenfall, Christoph Gruber Andritz, Rikard Norling Swerea KIMAB | | Combined report with KME-720. KME report sumitted to SEA, should be marked as confidential |
| KME-714 | Sulfur recirculation and improved material selection for high temperature corrosion abatement – Investigating different aspects of corrosion memory | Chalmers, HTC | Torbjörn Jonsson | B&W Völund, Götaverken Miljö, Ørsted, and Göteborg Energi via Energiforsk | Annika Stålenheim or Pamela Henderson Vattenfall, NN E.ON and Rikard Norling Swerea KIMAB | | KME report sumitted to SEA, should be marked as confidential |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| KME-715 | Composite Metal Polymer (CMP) for non-stick improvements in CHP plants | Swerea KIMAB | Matti Hutakangas, MH Engineering | MH Engineering, Ørsted, Öresundskraft | Bo Jönsson Sandvik Heating Technology, Annika Stålenheim or Pamela Henderson Vattenfall | | Short report sumitted to SEA and published as Energiforsk report. |
| KME-717 | Boiler corrosion at lower temperatures – influence of lead, zink and chlorides | Swerea KIMAB | Rikard Norling | Vattenfall, Andritz, Stockholm Exergi | Matti Hutakangas, MHE, Tomas Norman Völund, Jesper Liske/Torbjörn Jonsson Chalmers, Edgardo Coda and Jouni Mahanen Sumitomo | | Short report will be sumitted to SEA and published as Energiforsk report. |
| KME-718 | High temperature corrosion in used-wood fired boilers – fuel additives and coatings | Swerea KIMAB | Rikard Norling | Sumitomo, Andritz, E.ON, Stockholm Exergi, MH Engineering, Sandvik Heating Technology, Sandvik Materials Technology, Vattenfall AB | Jesper Liske, Chalmers/HTC, and Lars Mikkelsen, B&W Vølund | | Short report sumitted to SEA and published as Energiforsk report. |
| KME-719 | Development of weldability assessment and understanding of hot cracking in boiler and gas turbine materials | Chalmers | Lars Nyborg | GKN Aerospace | Edgardo Coda and Jouni Mahanen Sumitomo, NN Sandvik, NN Ørsted, NN Swerea KIMAB | | Project finalised 2018-06-30, according to SEA project decision |
| KME-720 | The effect of increased fractions of waste wood on water wall- and superheater corrosion - Combating corrosion by new materials and improved material selection | Chalmers, HTC | Jesper Liske | Sandvik HT, Sandvik MT, Sumitomo, MH Engineering, and Kraftringen via Energiforsk | Anna Jonasson E.ON, Annika Stålenheim/Pamela Henderson Vattenfall, Tomas Norman Völund, Hans Henrik Paulsen Ørsted, Rikard Norling KIMAB, Christoph Gruber Andritz | | Combined report with KME-711 KME report sumitted to SEA, should be marked as confidential |