

## **SWEDISH-NORWEGIAN RECOVERY BOILER COMMITTEE**

**Kajsa Fougner**

## **Report Swedish-Norwegian Recovery Boiler Committee (SNRBC)**

**Kajsa Fougner, secretary SNRBC**

The SNRBC has continued the work in the SNRBC subcommittees, board and secretariat.

*The incidents subcommittee* has handled the member mill's incidents - 25 incidents reported during 2018 - and documented discussions and conclusions in the incidents data bank and in the meeting minutes. *The recommendation subcommittee* has continued its work on keeping the SNRBC's recommendations updated. Nine recommendations have been revised and approved during 2018 and several more have been updated with smaller changes. One new recommendation – recommendation D5 High temperature deformation of superheater etc in recovery boilers – has been approved during 2018, and during 2018 also the new recommendation D6 Continuous supervision and record keeping of recovery boilers was composed, further elaborated in the workshop “workshop AFS 2017:3”, and finalized in the beginning of 2019. *The EIA subcommittee (electrical, instrumental and automation related questions)* has handled EIA-related incidents, four incidents during 2018 (included in the total of 25), and worked together with the recommendation subcommittee with two of the recommendations, recommendation B8 Emergency shutdown and rapid drain of recovery boilers and recommendation B14 Arrangement of alarms and indications in the control room.

*The education subcommittee* has implemented an extended recovery boiler operator education. The education includes the knowledge necessary to operate a recovery boiler safely and to receive the SNRBC recovery boiler operator certificate, and also aims to include the knowledge necessary to obtain the boiler operator certificate that is now a part of the Swedish regulation AFS 2017:3. The education subcommittee has also monitored the quality of training of operators and others active in the recovery boiler.

*EU standards* and their impact on the recovery boiler process has been monitored during the year. CEN TC 269, Working Group WG1, is in the process of revising the EN 12952, part 2 (material), part 5 (construction), 6 (inspection), 8 (firing of liquid fuels) and 10 (safety valves) and SNRBC has submitted its viewpoints of the proposed changes.

SNRBC arrange *the recovery boiler meeting* and the *experience sharing day* for the member companies. *Areas of special interest* during 2019 are:

- Risk Analysis Recovery Boiler (continuation) – SIL classification
- Heavy smelt runoff – analysis of mill process data
- Bursting test of tubes with welding defects

# Report from the Swedish-Norwegian Recovery Boiler Committee

Kajsa Fougner, ÅF  
Secretary of the Swedish-Norwegian Recovery Boiler Committee  
(SNRBC)

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June 6, 2019

55th Anniversary International Recovery Boiler Conference

**Sodahuskommittén**

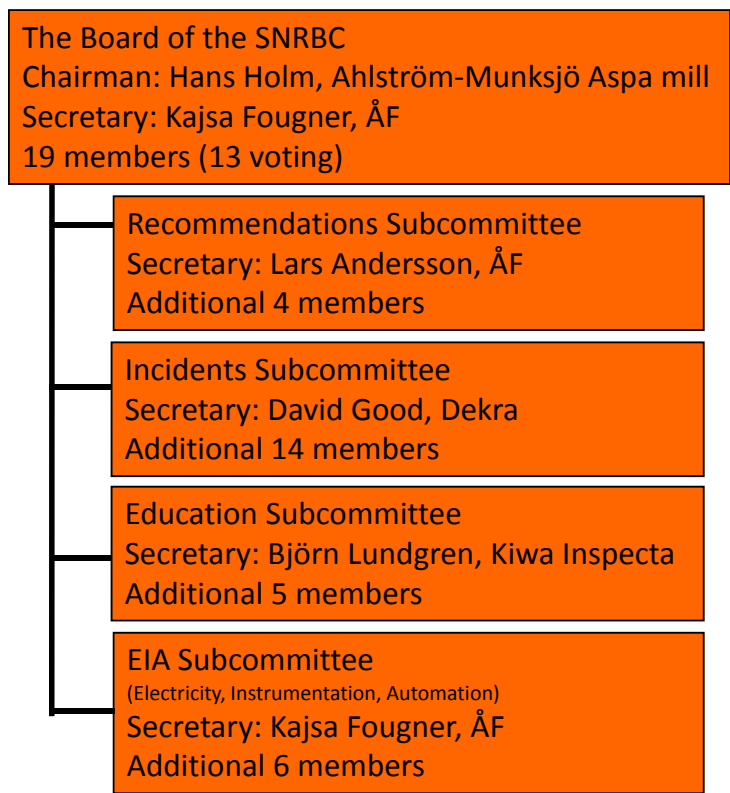
## Topics

- Members and organization
- Recovery Boilers in Sweden and Norway
- Reported incidents
- Recommendations and standardization
- Certification of operators
- Experience sharing day
- Recovery Boiler meeting
- Prioritized projects

# Members

- All mills producing kraft pulp and Domsjö in Sweden (22 mills), and Borregaard in Norway
- Recovery boiler manufacturers (Andritz and Valmet)
- 3rd party (Dekra, Force and Kiwa Inspecta)
- Swedish Paper Industry Workers' Union

# Organization



# Recovery Boilers in Sweden and Norway

## Autumn 2017

- Increased capacity recovery boiler SCA Östrand

## Autumn 2016

- Increased capacity recovery boiler Södra Cell Värö

## Autumn 2013

- The boiler in SCA Munksund was converted to single drum
- New evaporator line in BillerudKorsnäs Skärblacka

## Summer 2013

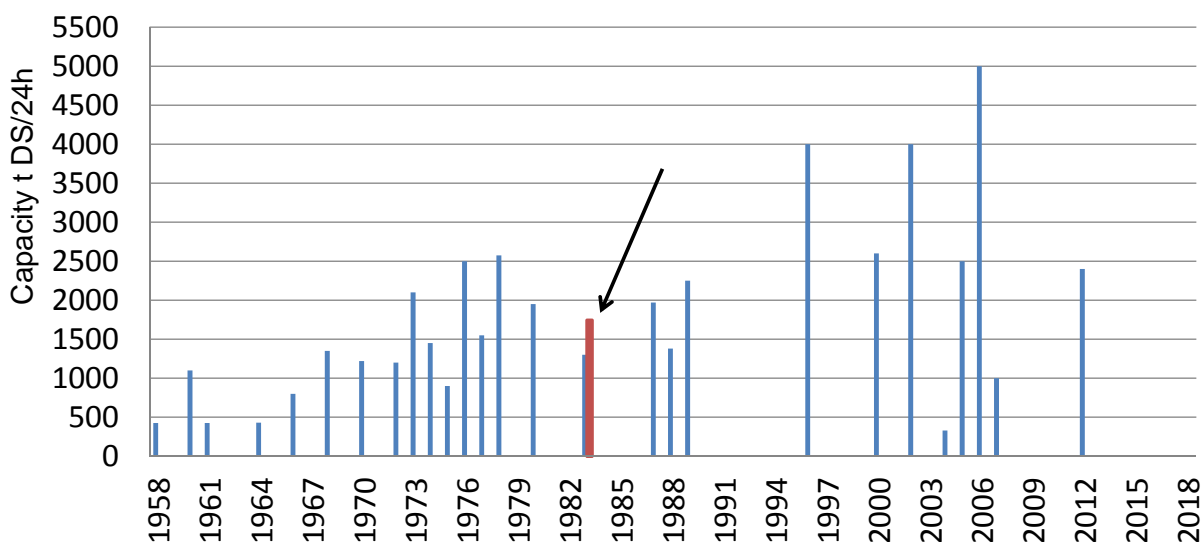
- Closure of Södra Cell Tofte, Norway

## Summer 2012

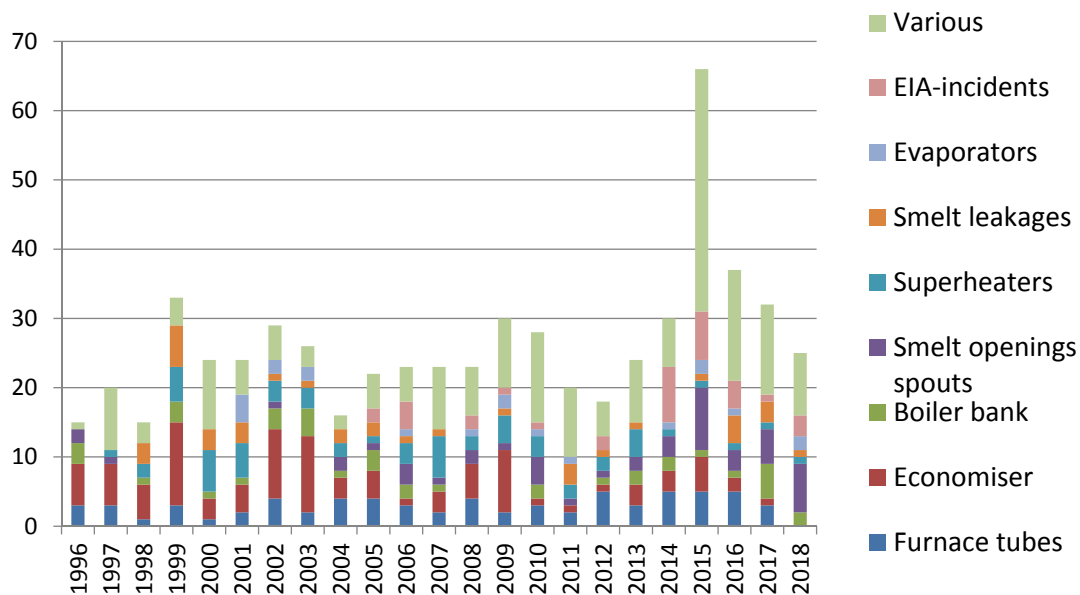
- Start up of a new boiler in Holmen Iggesund

# Recovery Boilers in Sweden and Norway

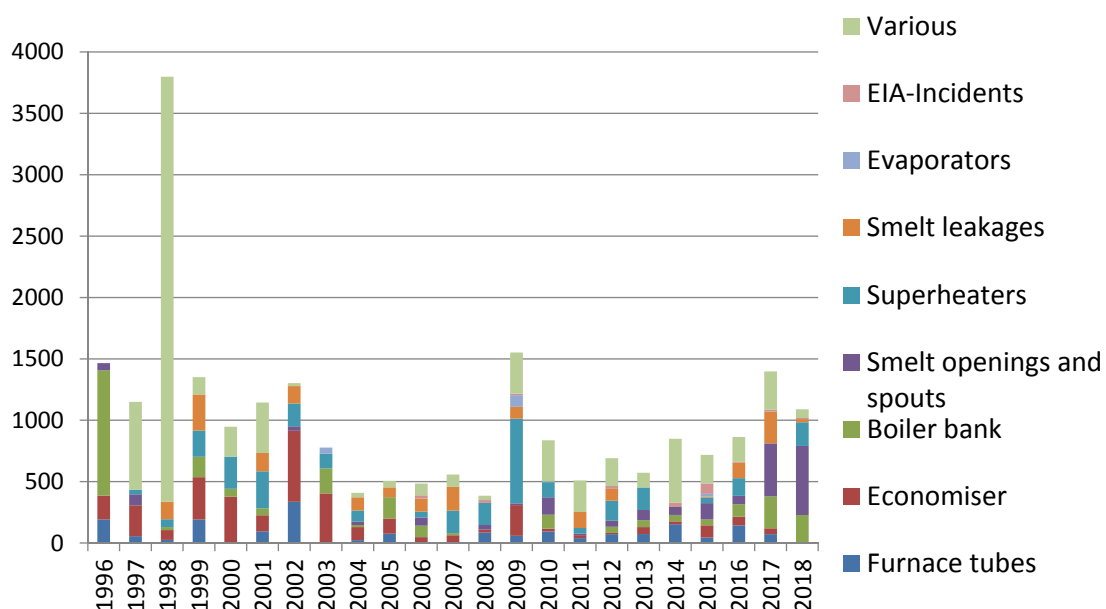
**"Average recovery boiler"**  
**Startup 1983 (35 years)**  
**Capacity 1,804 t DS/24h**



Reported incidents  
- Amount of incidents



Reported incidents  
- Down time [h]



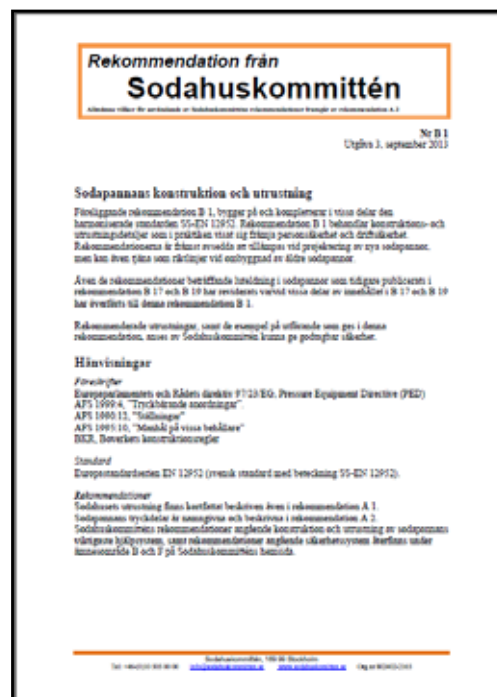
# Recommendations

The SNRBC has 34 recommendations, divided in the areas:

- A: Terminology and concepts
- B: Construction and equipment
- C: Operation and operational disturbances
- D: Inspection and maintenance
- E: Education of recovery boiler operators
- F: Safety conditions

Updating of the recommendations every third year

# Recommendations



# Recommendations approved 2018

- A1 Terms and concepts relating to chemical recovery and material and welding
- B1 Recovery boiler construction and equipment
- B8 Emergency shutdown and rapid drain of recovery boilers
- B12 Backup power in the recovery boiler
- B13 Equipment and safety system for oil and gas firing in recovery boilers
  
- C4 Quality of feed water, condensate, feed water, boiler water and steam
  
- D2 Inspection of recovery boilers
- D5 High temperature deformation of superheater etc. in recovery boilers (new)
  
- F1 Monitoring of recovery boilers

## AFS 2017:3 "Operation and control of pressurized equipment"

Since December 2017 Sweden has new regulations regarding pressurized equipment

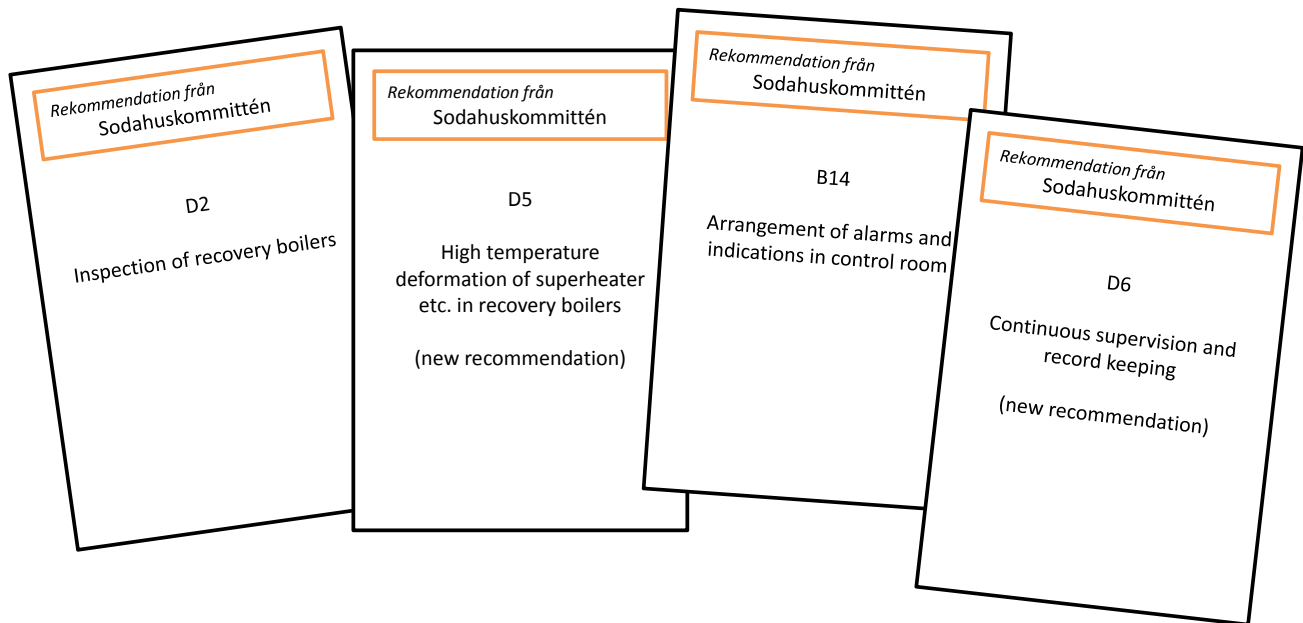
Changes of importance to recovery boilers:

- Inspection of recovery boilers
- Continuous supervision: Remaining lifetime, routines, record keeping
- Certification of boiler operators





# AFS 2017:3 "Operation and control of pressurized equipment"



## Standardization

- ✓ SNRBC, members in the Swedish Standardization, SIS
- ✓ SNRBC, represented in the Swedish Working Group TK285, Boilers
- ✓ SNRBC take part in the CEN Standardization work for the boiler standard: EN 12952, "Water tube boilers".
- ✓ SNRBC inform mills about news related to standardization



# Certification of recovery boiler operators

The education take place during four occasions, four days each.

The minimum accepted recovery boiler experience until examination and certification is 2 years.

All certificates need to be updated/renewed each 7<sup>th</sup> year.

The “re-examination test” is web-based and divided into three main parts:

- Recovery boiler design
- Combustion optimization
- Safety

Education has been adapted to the new Swedish regulation concerning pressure vessels

## Recovery Boiler Meeting 2018

...was hosted by Aditya Birla Domsjö

The participants visited Domsjö mill and Övik CHP plant, listened to presentations,



recovery boiler operators  
received their certificates



# Experience sharing day 2019

Operators and other persons from member companies meet and discuss important topics.

2019 the topic was

## **"Experiences of weak gases, strong gases, vent gases and methanol"**

- Gas systems, functionality, operability, maintenance
- Experience from SNRBC mills
- International accidents and "close calls"
- Regulations, norms, recommendations
- Discussions

# Workshop AFS 2017:3

Representatives from member companies meet and share experience from the implementation work of the changed regulations concerning recovery boilers

## Prioritized projects 2019

- Risk Analysis Recovery Boiler (continuation) – SIL classification
- Heavy smelt runoff – analysis of mill process data
- Bursting test of tubes with welding defects

## Prioritized projects 2019

### **Risk Analysis Recovery Boiler (continuation) – SIL classification**

Guidelines on risk analysis of recovery boiler incl

- recommended risk matrix and scales for consequence and probability
- required safety functions in a recovery boiler
- by SNRBC recommended SIL-level (Safety Integrity Level) for each safety function

Kiwa Inspecta Technology and workgroup  
Report scheduled to december 2019

# Prioritized projects 2019

## **Heavy smelt runoff – analysis of mill process data**

- Gathering of operational data from 2 – 4 SNRBC member mills
- Identification of heavy smelt runoff operation
- Analysis of data and identification of relevant relationships

Analysis performed by ÅF Pöyry

Report scheduled to December 2019

## **Bursting test of boiler tubes with welding defects**

Sandvik performs the burst tests, reference group from Dekra, Kiwa Inspecta and SNRBC

Report scheduled to June 2019

# Thank You!

