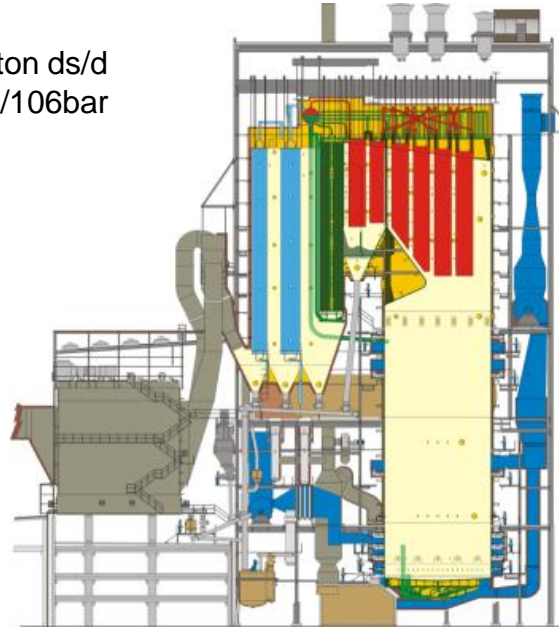


Minskat underhållsbehov med hållbara rör för besvärliga förbränningsmiljöer
Urban Forsberg Sandvik Materials Technology

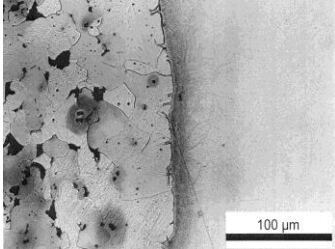
- Reduced need for maintenance with resistant composite tubes

3300ton ds/d
515C/106bar



COMPOSITE (COEXTRUDED) TUBES

- Two materials joined in one tube
- High alloyed for flue gas
- Low alloyed steam side
- Metallurgical bond for thermal transfer

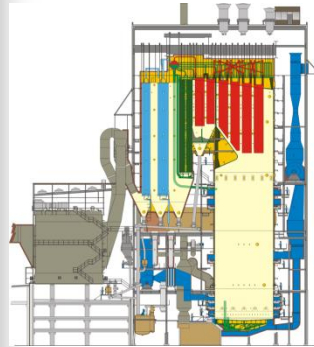


- Outside dia 31 to 76,2mm



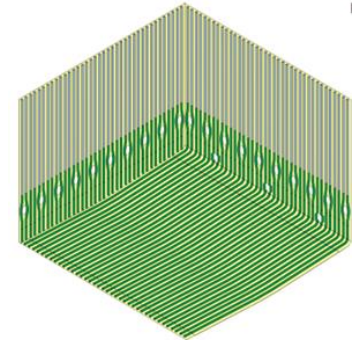
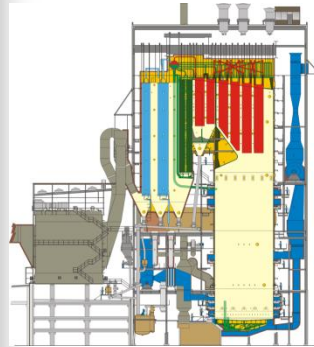
Minskat underhållsbehov med hållbara rör för besvärliga förbränningsmiljöer

- Reduced need for maintenance with resistant composite tubes
- 10 years operation in SCA Östrand Recovery boiler has verified safe operation with these tubes



Minskat underhållsbehov med hållbara rör för besvärliga förbränningsmiljöer

- Reduced need for maintenance with resistant composite tubes
- 10 years operation in SCA Östrand has verified safe operation
In Waterwalls
And in Floor, Sanicro38

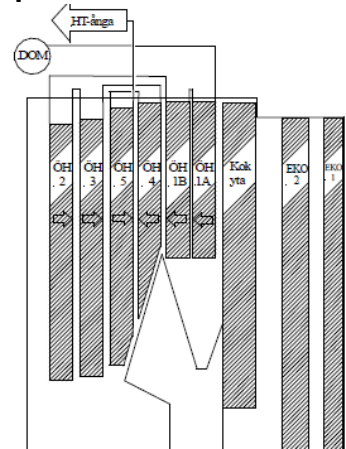
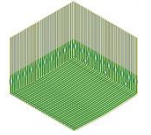


750mm above primary airports



Minskat underhållsbehov med hållbara rör för besvärliga förbränningsmiljöer

- Reduced need for maintenance with resistant composite tubes
- 10 years operation in SCA Östrand has verified safe operation
In Waterwalls
and Floor Sanicro 38
and Superheaters Sanicro 28



SANDVIK

CONCLUSION

- SANDVIK COMPOSITE TUBES contributed to increased efficiency in Recovery Boilers
increase from 80bar/480C to 106bar/515C = + 10-11MWe! assuming 20€/MWh => 1,6M€/year
- COMPOSITE TUBES Sanicro38 / > 100km in floors 20 full installations
Tubes in first full floor, Metsä Rauma F 1996, in excellent shape after 19 years service !
- COMPOSITE TUBES Sanicro28 and 310 > 100km in superheaters, 20 larger installations
Tubes in SCA Östrand in excellent shape after 9 years operation !
- **COMPOSITE REDUCE NEED FOR MAINTENANCE**



SMT.SANDVIK.COM

urban.forsber@sandvik.com