

OPERATIONAL EFFICIENCY IMPROVEMENT
FOR
EXISTING RDF FIRED STEAM BOILERS



**AKAYA
ENGINEERING LLP**

(A Joint venture with **DEHU**® Group)



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www.akayaengineering.com

INTRODUCTION

AKAYA ENGINEERING LLP (A JV with DEHU Group) having maximum experience to upgrade steam boiler on **RDF fuel** . Refuse Derived Fuel (RDF) fired steam boilers face multiple operational challenges impacting efficiency, reliability, and emissions. This document presents practical engineering solutions for improving performance of existing RDF fired boilers without major capital replacement.



1. COMBUSTION SYSTEM IMPROVEMENT

- Reduction of unburnt fuel and Loss on Ignition (LOI)
- Optimised RDF size and moisture control
- Zonal primary air distribution and secondary air staging
- Furnace temperature and oxygen profiling
- Grate speed and fuel residence time optimisation



2. CLINKER AND SLAGGING CONTROL

- Temperature moderation in fuel bed
- Control of alkali and plastic content
- Refractory and grate cooling improvements
- Ash fusion analysis and controlled ash removal

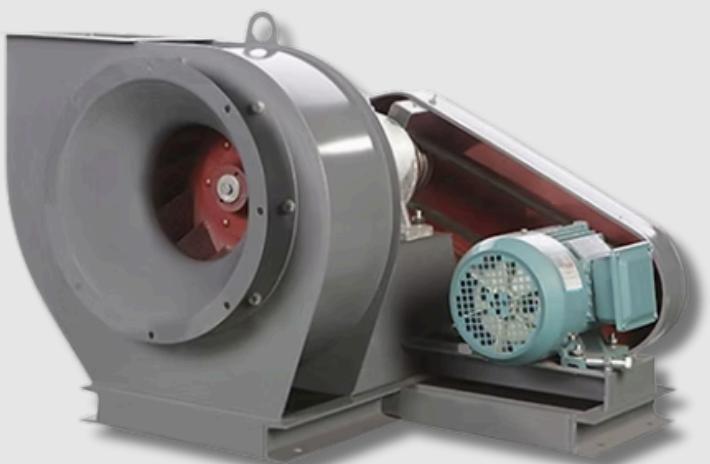
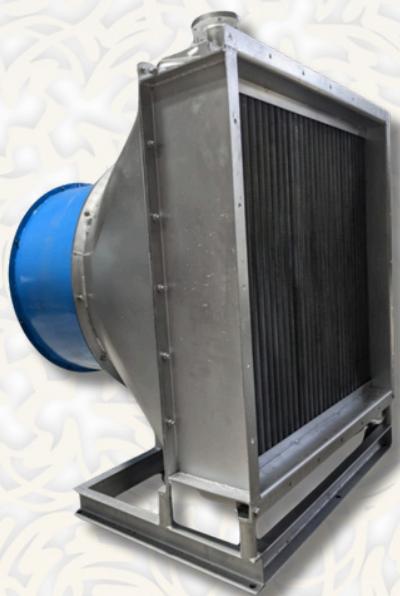




3. PRESSURE PART LIFE IMPROVEMENT



- **Superheater:**
 - Flue gas temperature balancing
 - Use of corrosion resistant materials and coatings
 - Optimised soot blowing practices
- **Water Wall and it's Fins, Evaporator Tubes:**
 - Uniform combustion zone temperature and Finn temperature analysis
 - Use of corrosion resistant materials and coatings
 - Periodic thickness measurement and predictive maintenance
- **Economiser:**
 - Acid dew point corrosion prevention
 - Optimised flue gas exit temperature



4. AUXILIARIES PERFORMANCE OPTIMISATION

- **Air Preheater:**

- Fouling reduction and cleaning improvement
- Use of corrosion resistant materials.
- Improved heat recovery

- **FD / ID / PA Fans:**

- Fan curve matching wrt fuel analysis
- Erosion resistant for ID fan.
- Stable furnace draft control



5. AIR POLLUTION CONTROL SYSTEM IMPROVEMENT

- **Selective Non-Catalytic Reduction (SNCR)**

- Injection temperature optimisation
- Reagent distribution and control logic
- Reduction of ammonia slip

- **Bag Filter / ESP:**

- Air-to-cloth ratio optimisation
- Improved cleaning and rapping logic
- Stable emission compliance

Building a sustainable future with advanced engineering and reliable technology.



6. OPERATIONAL CHALLENGES

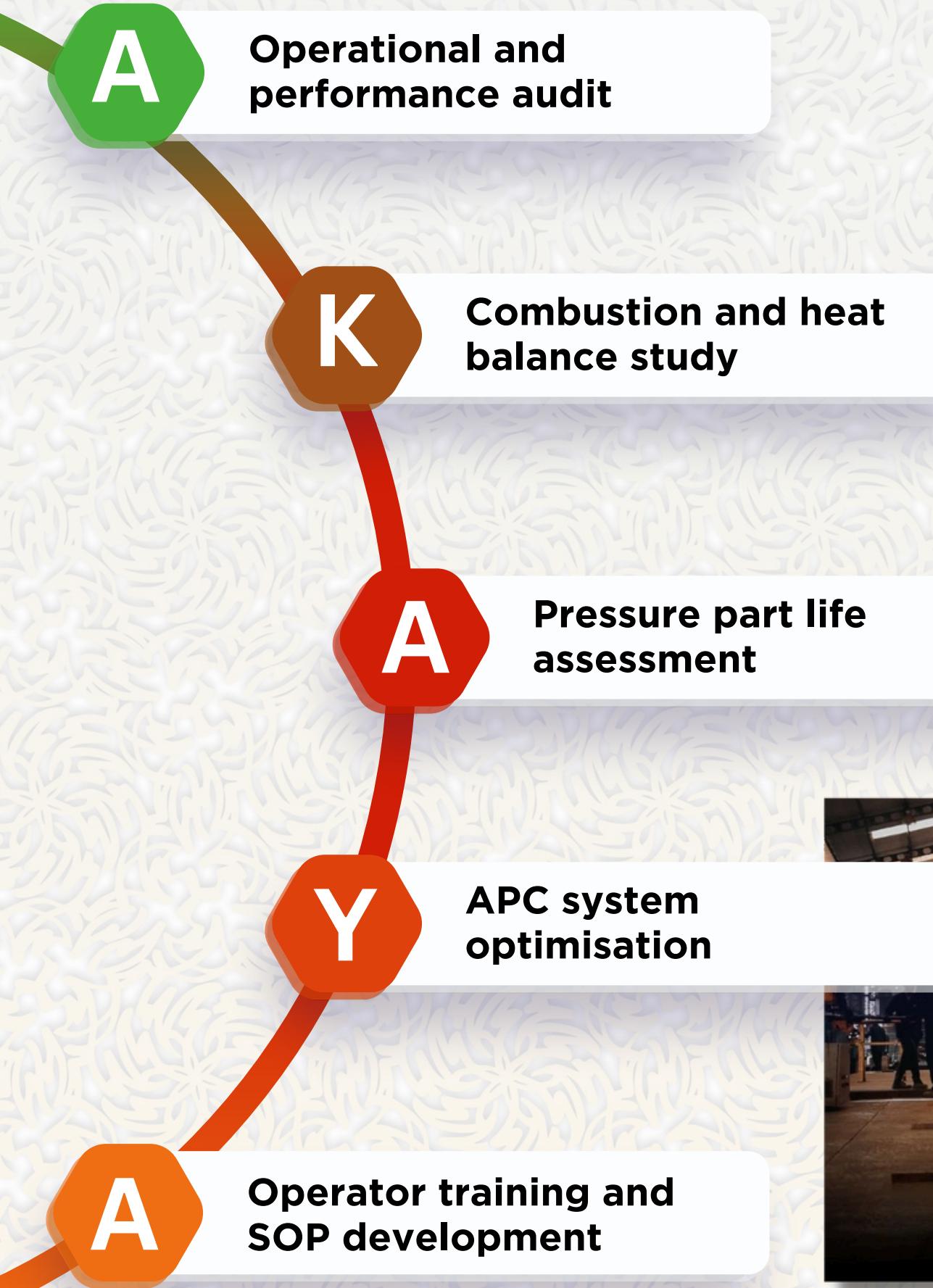


- Operation on 100% **RDF fuel**
- Steam-fuel ratio optimisation
- Achieving rated steam generation
- Superheater steam temperature stabilisation

AKAYA ENGINEERING LLP systematic approach to combustion, pressure parts, auxiliaries, and pollution control systems significantly improves RDF boiler efficiency, availability, and life cycle cost.



SCOPE OF SERVICES



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Let's Build the Future Together

Complete Boiler & Power Plant Services
From Design to Commissioning

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