

# ENERGY EFFICIENCY IN INDUSTRIAL FURNACES

# AUTOMOBILE SECTOR

- “ENERGY COSTS IN ASSEMBLY PLANTS ARE EQUIVALENT TO APPROXIMATELY 1% OF THE PRODUCTION OUTPUT BY THE VEHICLE ASSEMBLY PLANTS, MAKING IT A RELATIVELY SMALL COST FACTOR IN THE TOTAL PRODUCTION PROCESS”
- HOWEVER.....

# AUTOMOBILE SECTOR

FOR AUTO COMPONENT UNITS (SUCH AS  
ENGINE, PISTON, FORGING UNITS) USING  
FURNACES,

THE FUEL COST AS PERCENTAGE OF  
TOTAL MANUFACTURING COST IS WELL  
OVER 10 PERCENT !!

# POTENTIAL ENERGY SAVINGS IN AUTO COMPONENT UNITS

**20 % FUEL SAVINGS**

**IS A PRAGMATIC FIGURE!**

# How?

# STRATEGIES

- **PRODUCTIVITY**
- **COMBUSTION TECHNOLOGY**
- **WASTE HEAT RECOVERY**

# PRODUCTIVITY

- **PRODUCTIVITY = PRODUCTION AT DESIGN CAPACITY**
- **OVERLOADING AND UNDER-LOADING RESULTS IN EXCESS FUEL CONSUMPTION**

**MOST FURNACES OPERATE AT 60-70 %**



# COMBUSTION TECHNOLOGY

- **BURNERS**
- **CONTROLS- TEMP, RATIO**
- **FUEL OIL RING MAINS**

# CASE – A LEADING PISTON UNIT

- 40 CRUCIBLE HOLDING FURNACES
- SINGLE COMBUSTION AIR BLOWER
- TEMP CONTROL THRU OIL REGULATION
- IMPROPER FUEL OIL RING MAIN
- NO WASTE HEAT RECOVERY

# WASTE HEAT RECOVERY

- HIGH TEMP. FURNACES
- MEDIUM TEMP. ENGINES,GT,FCE
- LOW TEMP. PROCESSES

# ROUGH ENERGY BALANCE REHEATING FURNACE

## INPUT

- FUEL 100 %

## OUTPUT

- USEFUL HEAT 20 %
- WASTE GAS HEAT 70 %
- RADIATION AND OTHER LOSSES 10 % %

# WASTE HEAT RECOVERY

## WHY?

- **OVER 60% OF ENERGY INPUT LOST IN EXHAUST OF HIGH TEMP FURNACES**
- **RECOVERY TECHNOLOGY AVAILABLE**
- **ATTRACTIVE SAVINGS**
- **FAST PAYBACK PERIODS**

# How?

- AIR PRE HEATING
- CHARGE PREHEATING
- PROCESS HOT WATER / STEAM
- PROCESS COOLING
- POWER GENERATION

## CASE- A LEADING FORGING UNIT

- LARGE NUMBER OF BATCH TYPE, ROTARY HEARTH, PUSHER FURNACES WERE REDESIGNED, FITTED WITH RECUPERATORS AND CONTROLS
- FUEL SAVINGS ACHIEVED OVER 30 %

# HOW MANY DO IT?

60%....?

40%....?

10%....?

OR

1%.....?

# A WELCOME STEP

- **MEDA HAS LAUNCHED A SCHEME TO PROMOTE WASTE HEAT RECOVERY !!**
- **FINANCIAL ASSISTANCE FOR MAKING DPR FOR WASTE HEAT RECOVERY SCHEMES FOR POWER GENERATION**
- **SCHEME NOW EXTENDED FOR THERMAL APPLICATIONS AS WELL TO PROMOTE ENERGY EFFICIENCY IN SMALL TO MEDIUM UNITS.**

**THANK YOU**

**QUERIES?**

**PLEASE CONTACT**

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