

Innovative solutions in Coal Gasification: **Our Experience**

Varun Kumar
Managing Director, Dev Energy
www.devenergy.co.in

COAL GASIFICATION - TECHNOLOGY & EPC

Focus on
GAS TO HEAT – Thermal Application

Serving India since 2004
180 + Operating Gasification Systems

Core Technology – proven with 100% success
FIXED BED – AIR – NORMAL PRESSURE

User Industries
STEEL, CERAMIC, GLASS, NON FERROUS

PARTNERSHIP WITH YISHENG, CHINA



OUR ACHIEVEMENTS

First IOF PELLET plant on 100% Coal Gas

First Glass furnace on Coal Gas

First Bone China Plant on Coal Gas

Gas Output : 5,000 – 80,000 Nm³/ Hr



Technology - TWO STAGE FIXED BED

COAL VM

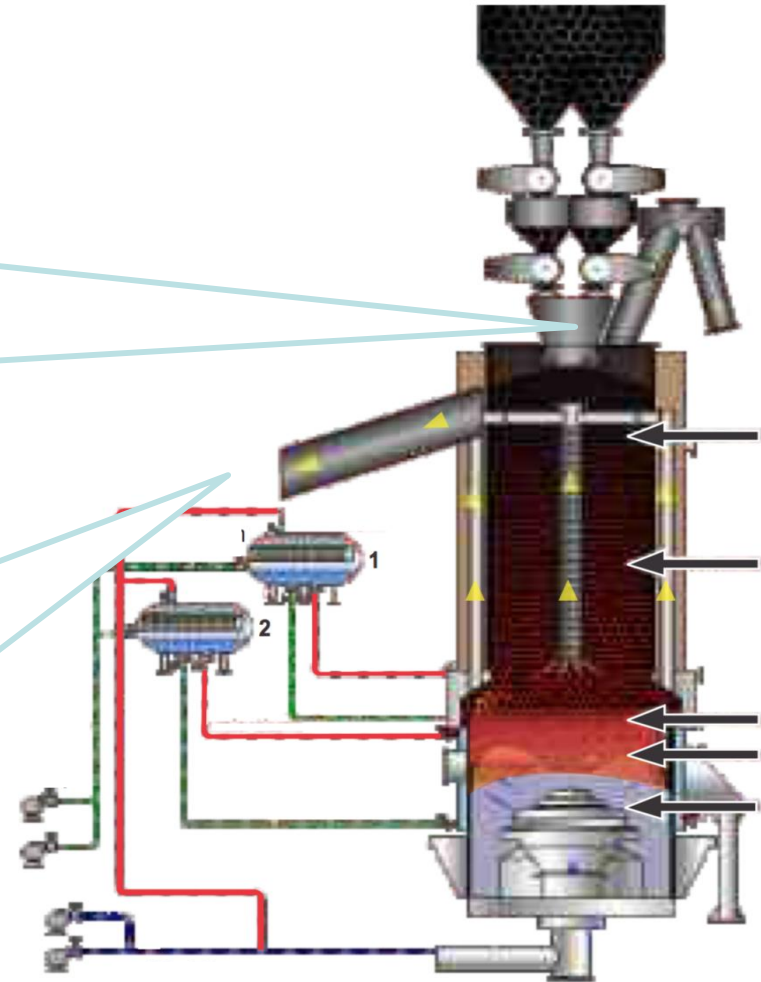
UPSTAGE GAS OUTLET

Outlet Temp ~ 100 °C
 Volatile Matter in un cracked form
 with ~ 5 % C_nH_m
 GCV > 1800 Kcal / Nm³

COAL FC

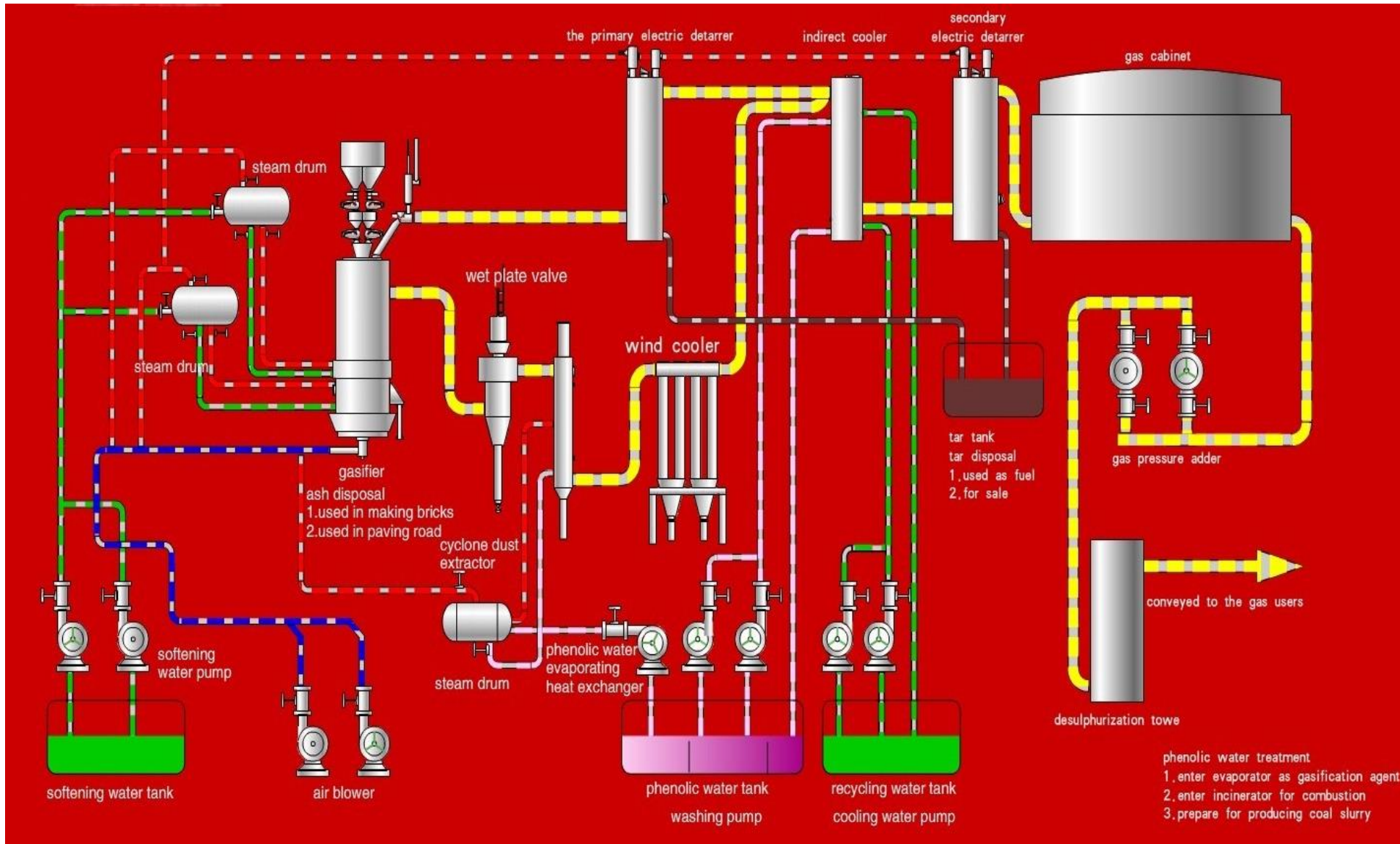
DOWNSTAGE GAS OUTLET

Outlet Temp ~ 450 °C
 Carbonized Gas (CO + CH₄ + H₂)
 GCV > 1200 Kcal / Nm³





Complete Process Flow



MINERA STEEL AND POWER

GAS OUTPUT : ~ 15000 Nm³/h
INSTALLATION : 2 X Ø4.0 DSC
RUNNING SINCE : AUG 2019



SHRI BAJRANG POWER ISPAT

GAS OUTPUT : ~ 18000 Nm³/h
INSTALLATION : 3 X Ø3.6 DSC
RUNNING SINCE : APRIL 2015



HSIL – AGI GLASPAC

FURNACE : 500 X TPD

RUNNING SINCE : JAN 2020

INSTALLATION

: 1 X $\Phi 4.0$ DSC

COAL GAS

: 8000 Nm³/h



JINDAL STEEL AND POWER LIMITED

FURNACE : 260 TPH

RUNNING SINCE : NOV 2016

INSTALLATION

COAL GAS

: 10 X $\Phi 3.6$ DSC

: 80000 Nm³/h



Kajaria Ceramics Limited

GAS OUTPUT : ~ 15000 Nm³/h
INSTALLATION : 2 X Φ3.6 DSC
RUNNING SINCE : NOV 2015



Modulo Ceramics P Limited

GAS OUTPUT : ~ 9000 Nm³/h
INSTALLATION : 3 X Φ3.4 DSC
RUNNING SINCE : APRIL 2019



Challenges now and next level

- CAN USE ONLY SIZED COAL
- CAN USE HARD / HIGH ASH FUSION TEMP. COAL
- CAN GENERATE OUTPUT $\sim 10000 \text{ Nm}^3 / \text{hr}$ PER SYSTEM
- LOW CARBON CONVERSION
- LEAN GAS AS IS NITROGEN CARRY OVER WITH AIR

> CIRCULATION FLUIDISED BED

FUTURE IS CFB – Why ?

USE COAL FINES – LOW ASH FUSION COALS

OPEN SOURCE TECHNOLOGY – NO LICENSE FEE

ATMOSPHERIC PRESSURE – LOW CAPEX & OPEX





FLUIDISED ASH – MEDIUM OPERATING TEMPRATURE

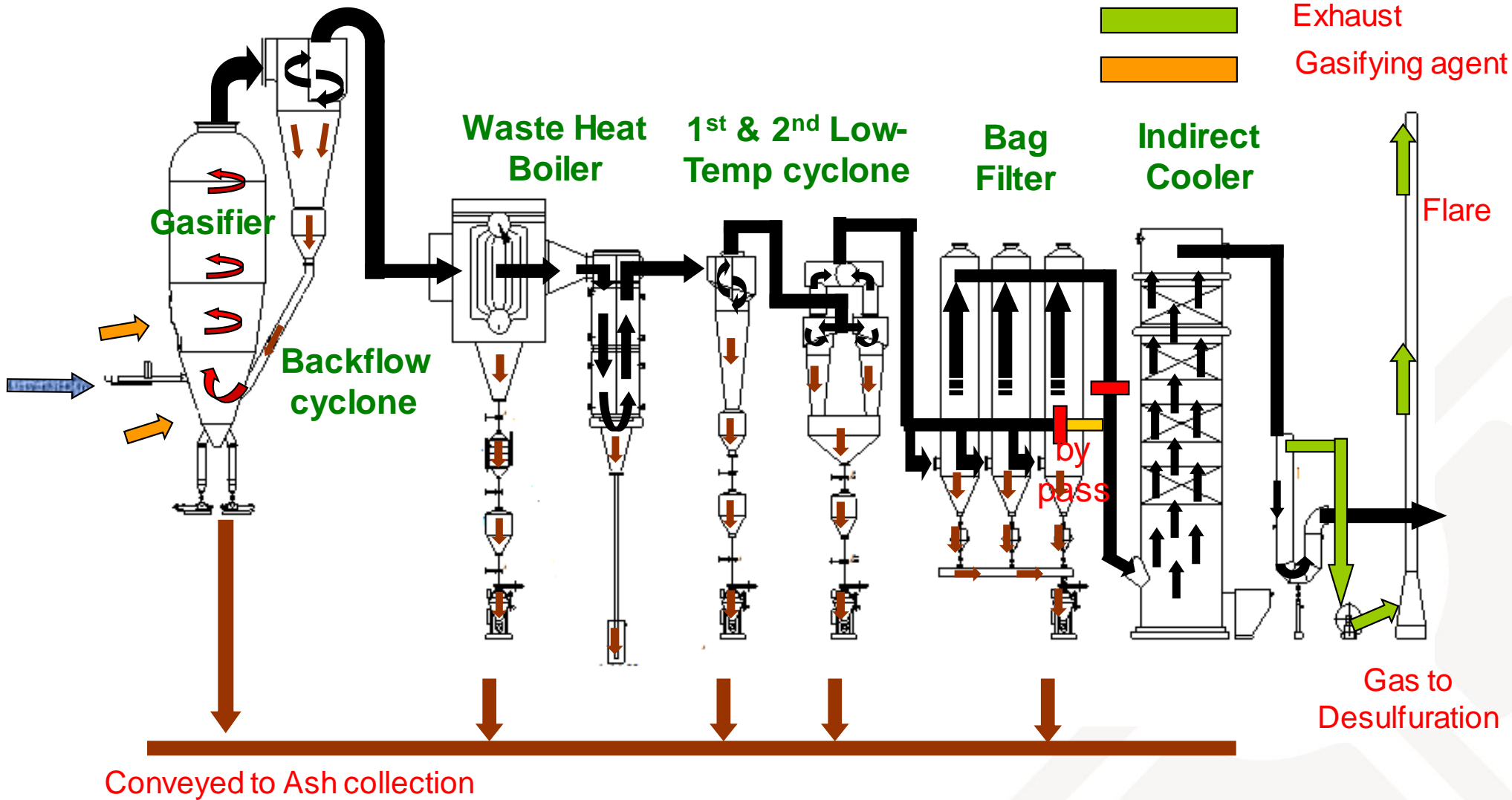
MEDIUM LEVEL GAS CLEANING

SYSTEM SIZE ~ 6 M WITH ~ 40000 Nm³ / hr

LOW INVESTMENT ~ 100 Cr. CAPEX PER GASIFIER

Technology – FLUIDISED BED

-  Coal
-  Coal gas
-  Ash
-  Exhaust
-  Gasifying agent





40000 x 3 RANPING XINFAHUAYU ALUMINA



RECOGNITION AS A NATION BUILDING TECHNOLOGY

PRE APPROVAL FOR TECHNOLOGY FROM NGT / PCB

COAL – AVAILABILITY THROUGH LINKAGE – EXISTING & NEW

EASE OF TECHNOLOGY TRANSFER FROM CHINA

CLEAR GUIDELINES FOR ASH & TAR USAGE

EASE IN BANK FINANCE WITH INTEREST RATE BENEFITS

*If you have a need of Coal gas.....
....We are ready to provide
an innovative solution
for you*

Thank You !