



***ZEMAG Technology for
Upgrading Low Grade Coals***

Tuzla , 23 November 2011

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- 1) Crushing
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- 3) Drying
- 4) Briquetting

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INTRODUCTION ZEMAG MASCHINENBAU GMBH

EXPERIENCE FOR MORE THAN
155 YEARS

Zeitzer **E**isengiesserei- &
Maschinenbau-**A**ktien-
Gesellschaft (Zeitz Machine
Factory and Iron Foundry
Corporation)

foundet in 1855 by Hermann
Schäde and Ludwig Lange in
Zeitz



Location



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Coal Preparation Plant MIBRAG



Coal Briquetting Plant MIBRAG



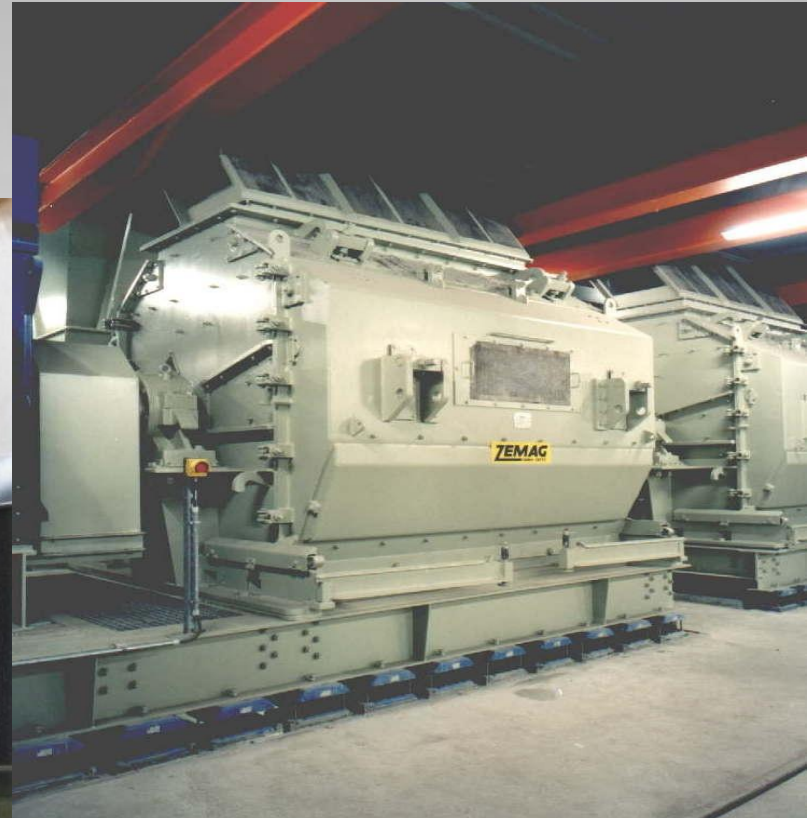
Briquetting Plant Schwarze Pumpe



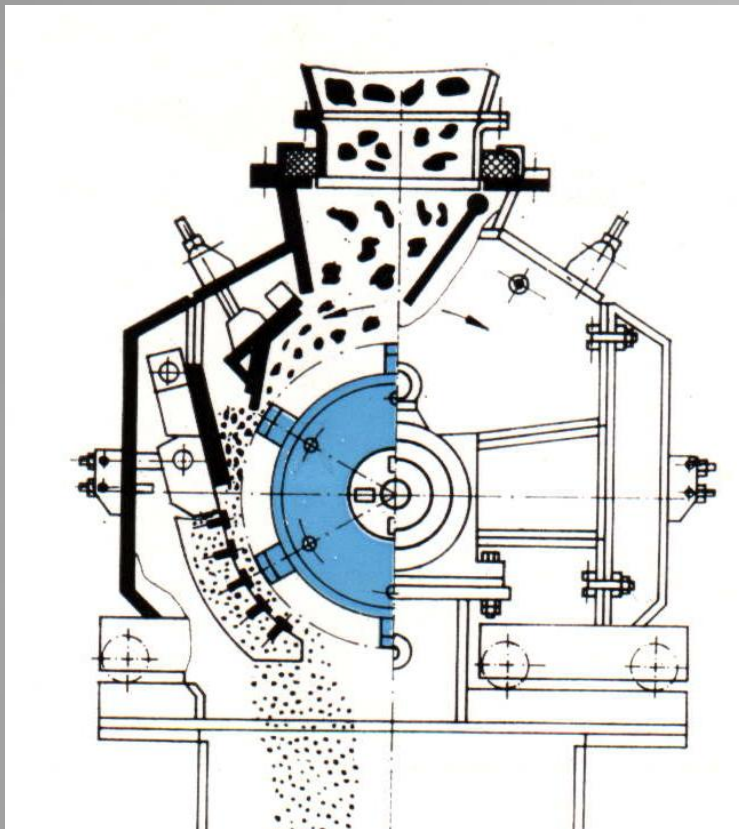
Chinese Briquetting Plant Newgold



ZEMAG CRUSHING TECHNOLOGY



ZEMAG Impact Hammer Mills



ZEMAG Hammer Mills are applied in Power Producing and Basic Materials Industry, such as in: Open-pit Mines, Power Plants, Briquetting Factories, Cement and Fertilizer Plants.

ZEMAG SCREENING TECHNOLOGY



Screening and Crushing Plant Schleenhain (Germany)



One Roller Screen 4200 t/h

ZEMAG DRYING TECHNOLOGY

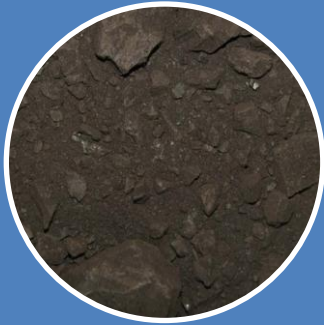


ZEMAG Tubular Dryers

ZEMAG Tubular Dryers are applied for drying free-flowing materials preferably with a grain size of 0-60 mm by continuous and high reduction of materials' moisture.



ZEMAG Tubular Dryers – Influences on Drying Effect



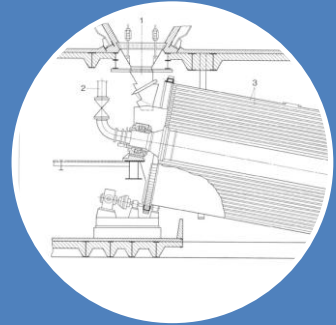
Coal



Air



Steam



ZEMAG
Dryer
Design



ZEMAG Tubular Dryers – General Facts

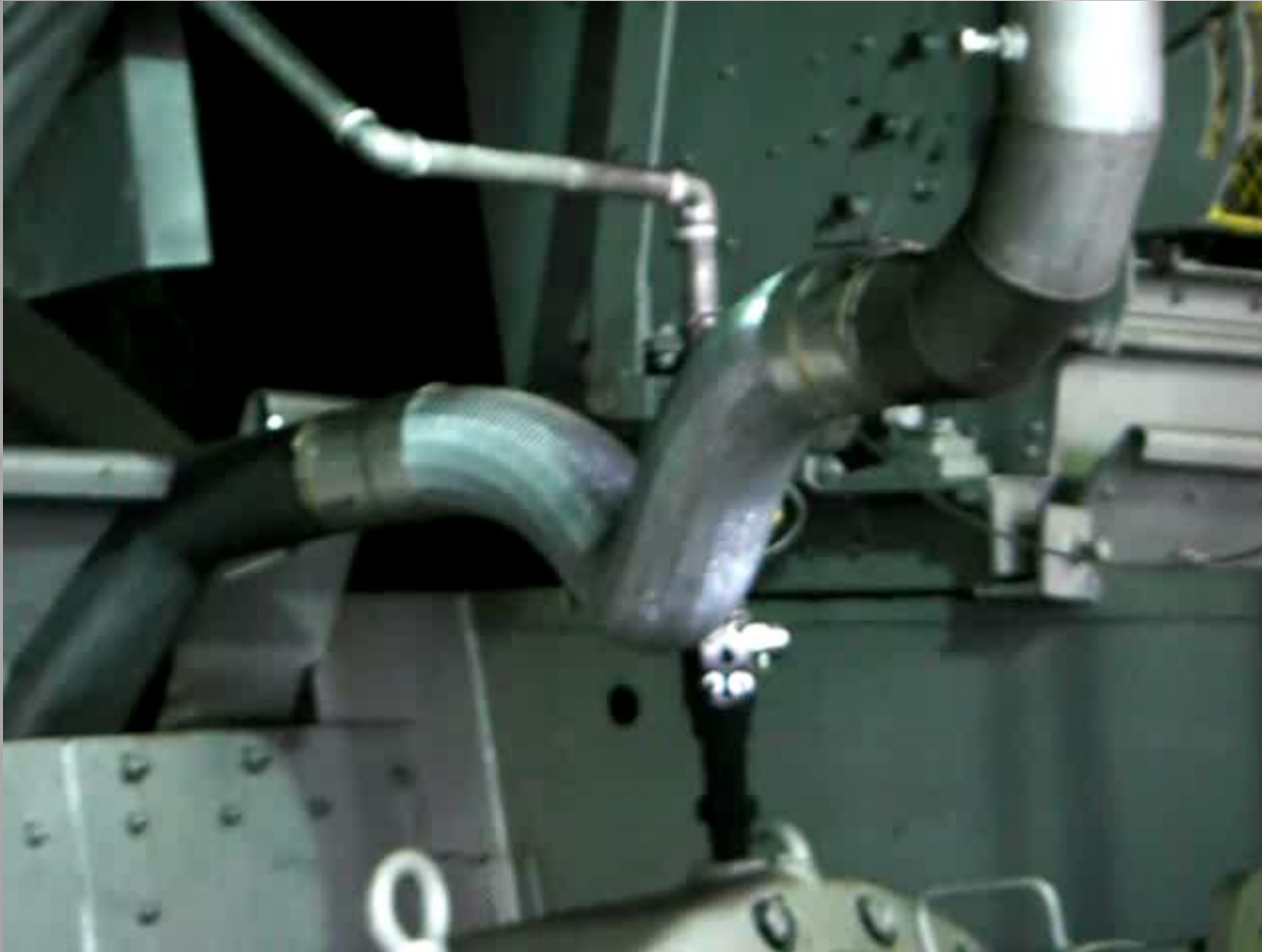
high evaporation indexes (ratio of evaporated water per dryer surface)

Huge drying surface of app. 3600 m² hard brown coal of 40 % moisture down to 10-20 % (60-70t/h raw coal)

ZEMAG tubular dryers achieve a very long lifetime (1937 MIBRAG still running)

Safe operation due to indirect drying method

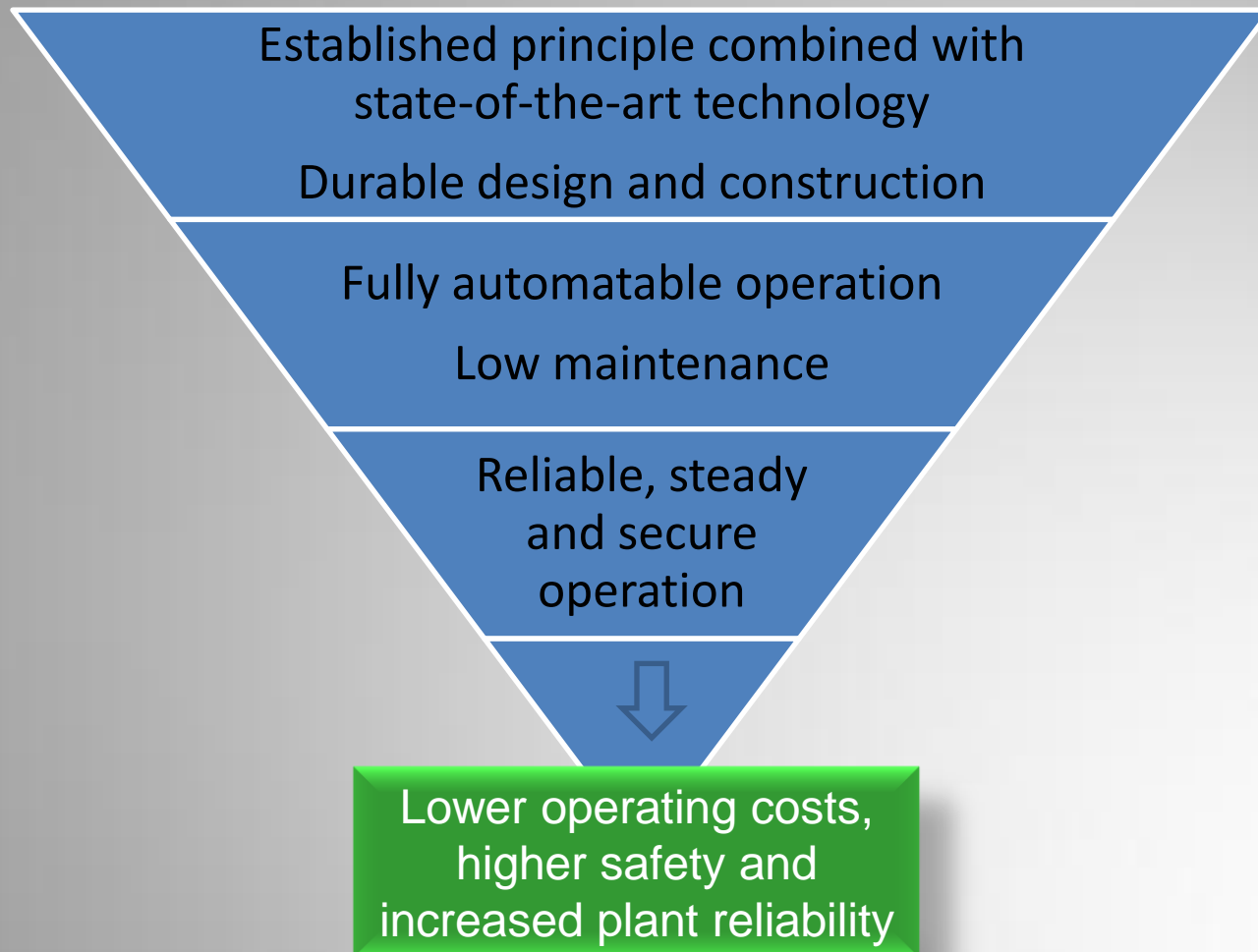
ZEMAG Tubular Dryers – Design and Function



ZEMAG Tubular Dryers – Summary Design and Function

- A slowly rotating *drum*, mounted between two front walls, is equipped with a huge number of *tubes* (heating surface). The material moves slowly down in the slightly inclined drum. The tubes are equipped with special reversing strips to speed up or delay the material flow
- The *steam for drying* passes through the upper tubular journal into the inner space of drum, where it completely surrounds the tubes. This steam leaves the drum as condensate through the tubular journal at the discharge end
- The carrying air for the ejection of the vapour content within the material enters the tubes together with the material at the upper front wall. The air/steam mixture and the material leave the tubes together at the discharging front wall

Summary for ZEMAG Tubular Dryers



ZEMAG BRIQUETTING TECHNOLOGY



ZEMAG Roller Presses



Binderless pressed northern
Chinese hard brown coal
briquettes



ZEMAG Ram Extrusion Presses



ZEMAG Ram Extrusion Presses

- ZEMAG Ram Extrusion Presses are used for binderless briquetting of prepared brown coal
- The coal is feeded into a form channel and compacted by a reciprocating plunger
- The friction of the briquette line in the form channel generates the counterforce to the plunger
- This way the plunger force is getting effective
- With every stroke the briquette line is pushed forward by exactly the thickness of one briquette
- ZEMAG ram extrusion press PSA 400 is a double two-line press. The two plungers on each side are working displaced by 180°
- This way 4 briquettes are pressed with every rotation of the crankshaft

ZEMAG Ram Extrusion Presses



Binderless pressed soft brown coal briquettes
of the ram extrusion press as bulk material

ZEMAG EXAMPLE ANALYSIS FOR BRIQUETTABILITY

at ZEMAG laboratory in cooperation with
Freiberg Mining Technique University

