

LOESCHE cement mills and a new drive concept for large Loesche Mills



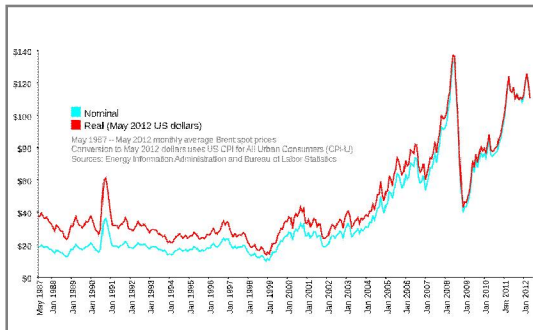
Presented by Dr. Daniel Strohmeyer – Director of Process Technology | loesche.com

1. Introduction

- 2. Loesche cement mills
- 3. Concept for large capacities
- 4. Summary/ Outlook

Introduction

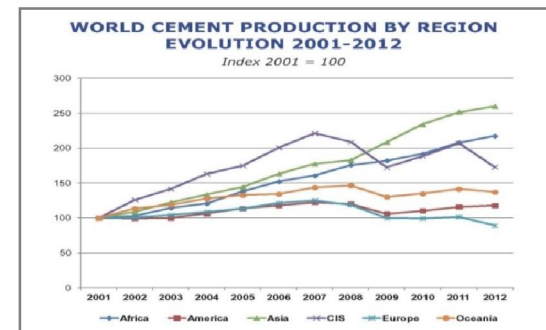
The cement industry



RESOURCES
energy, water, raw materials



ENVIRONMENTAL IMPACT
emissions (e.g. CO₂, NO_x, dust)



CEMENT DEMAND, ETC
per capita consumption, population
growth, cement qualities, capacity

market situation defines the angle for product development

Main aims of product development

APPROACH

Improve/adapt the product according to the requirements of the market
and
anticipate future market conditions and develop technologies which offer entirely new
opportunities – leading the way

GOAL – REDUCTION OF TCO

REDUCE OPERATIONAL COSTS (OPEX)

electrical energy consumption
spare parts, wear parts
water, etc.

REDUCE INVESTMENT COSTS (CAPEX)

INCREASE AVAILABILITY

INCREASE FLEXIBILITY OF THE GRINDING SYSTEM



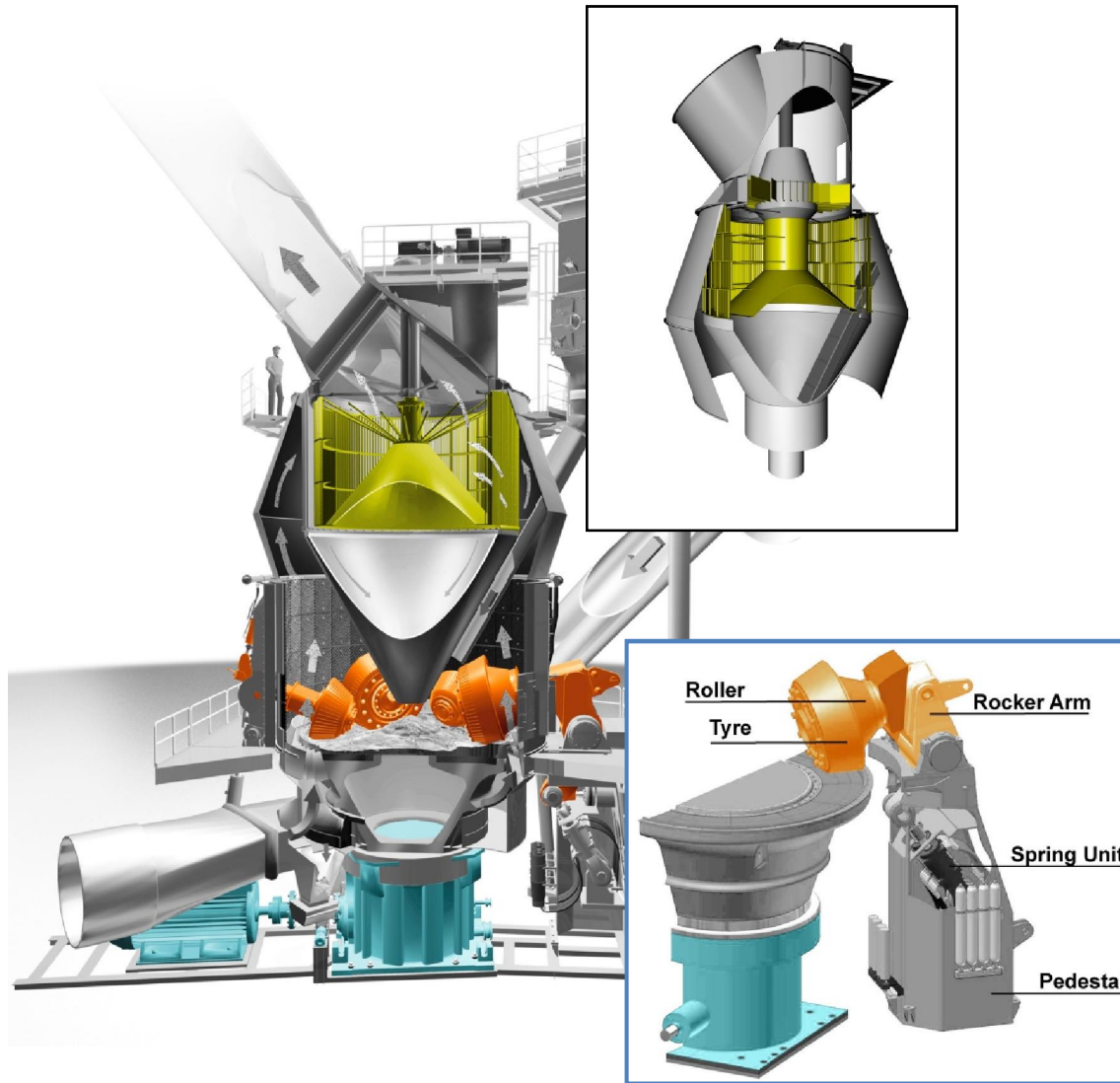
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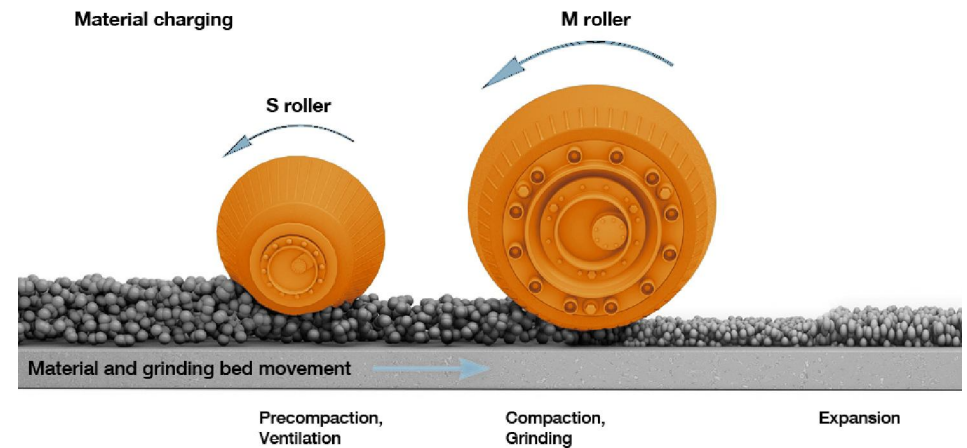
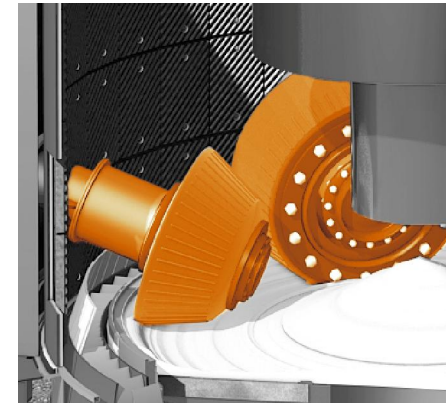
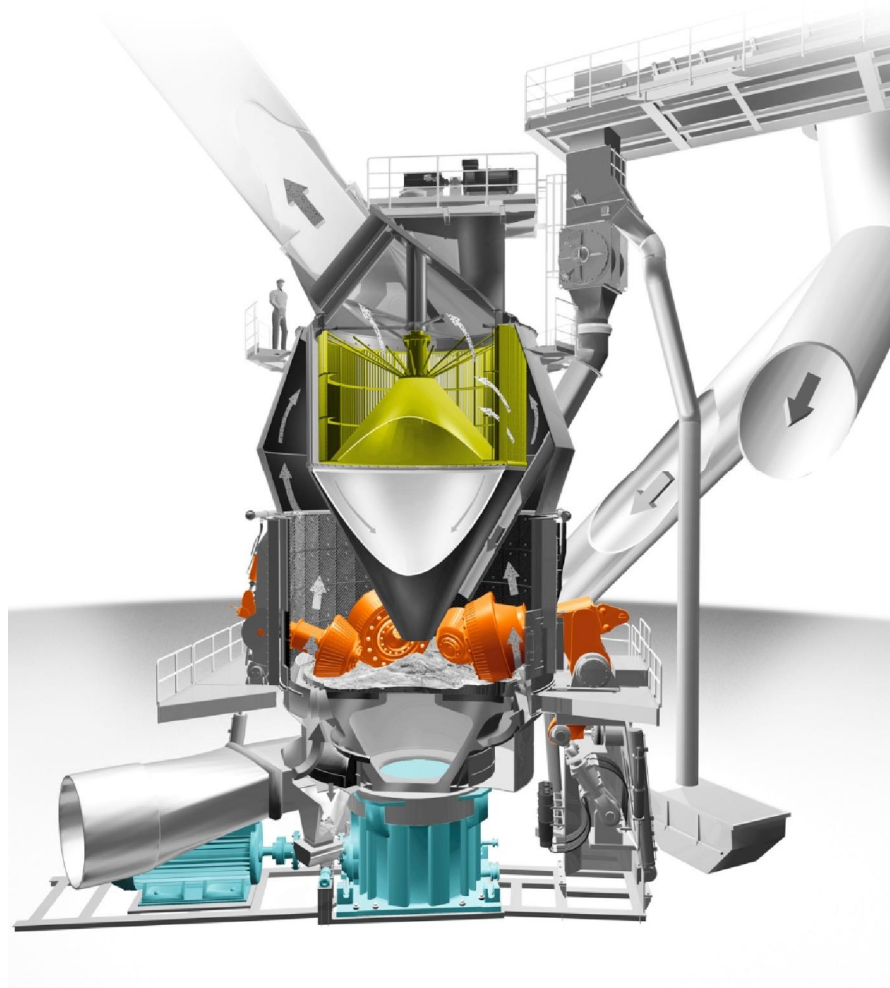
Basic features



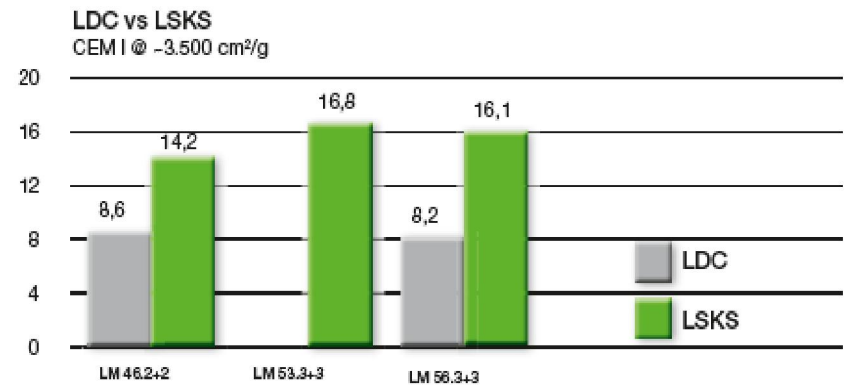
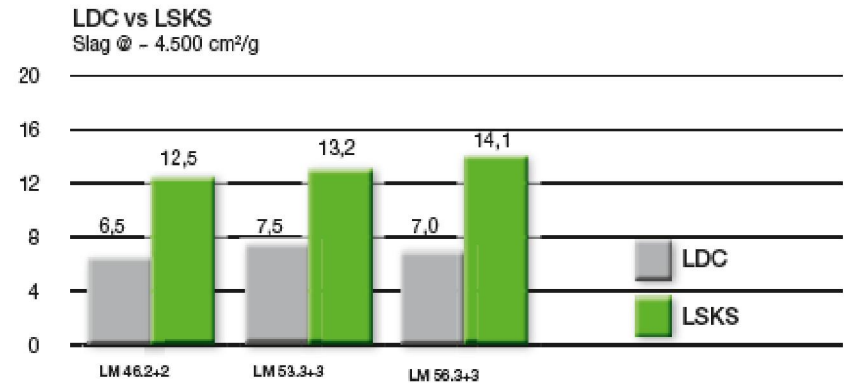
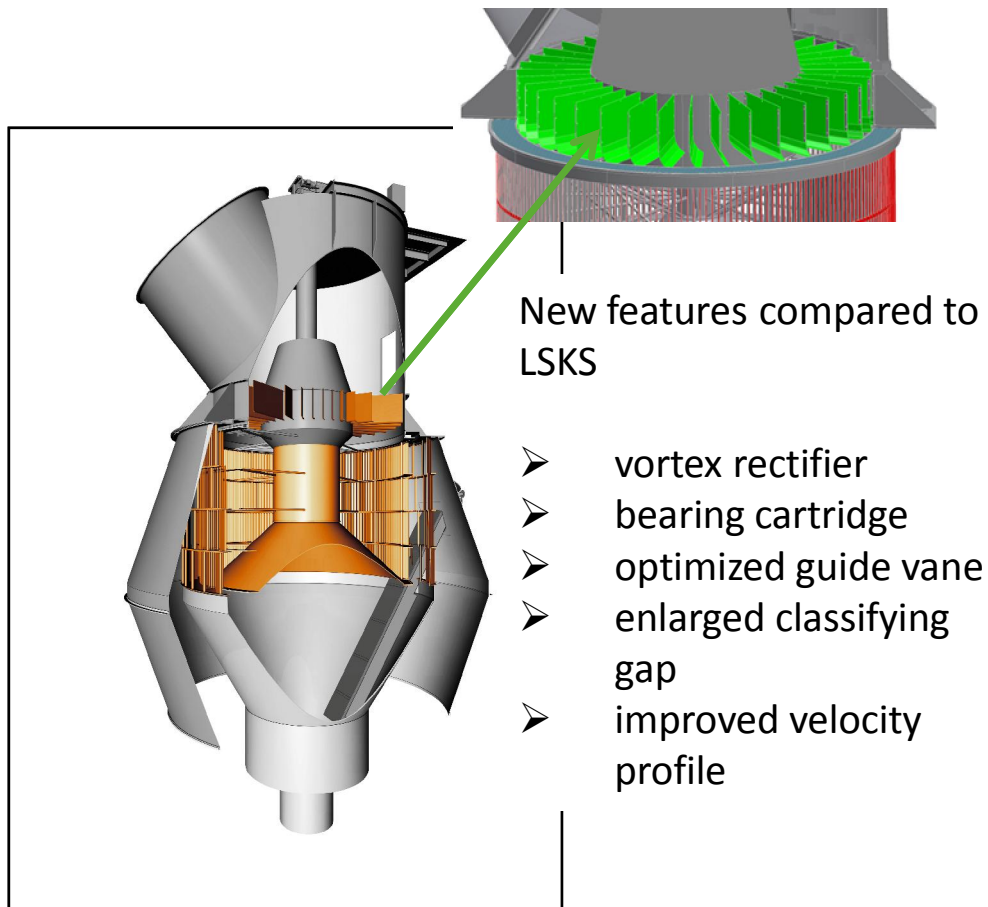
- Flat grinding table
- Tapered rollers
- Comminution by compressive and shear forces
- Modular design concept
- Hydro-pneumatic loading of rollers
- Low masses, low vibration level
- Newly developed classifier type LDC

LOESCHE cement mills

Support roller concept

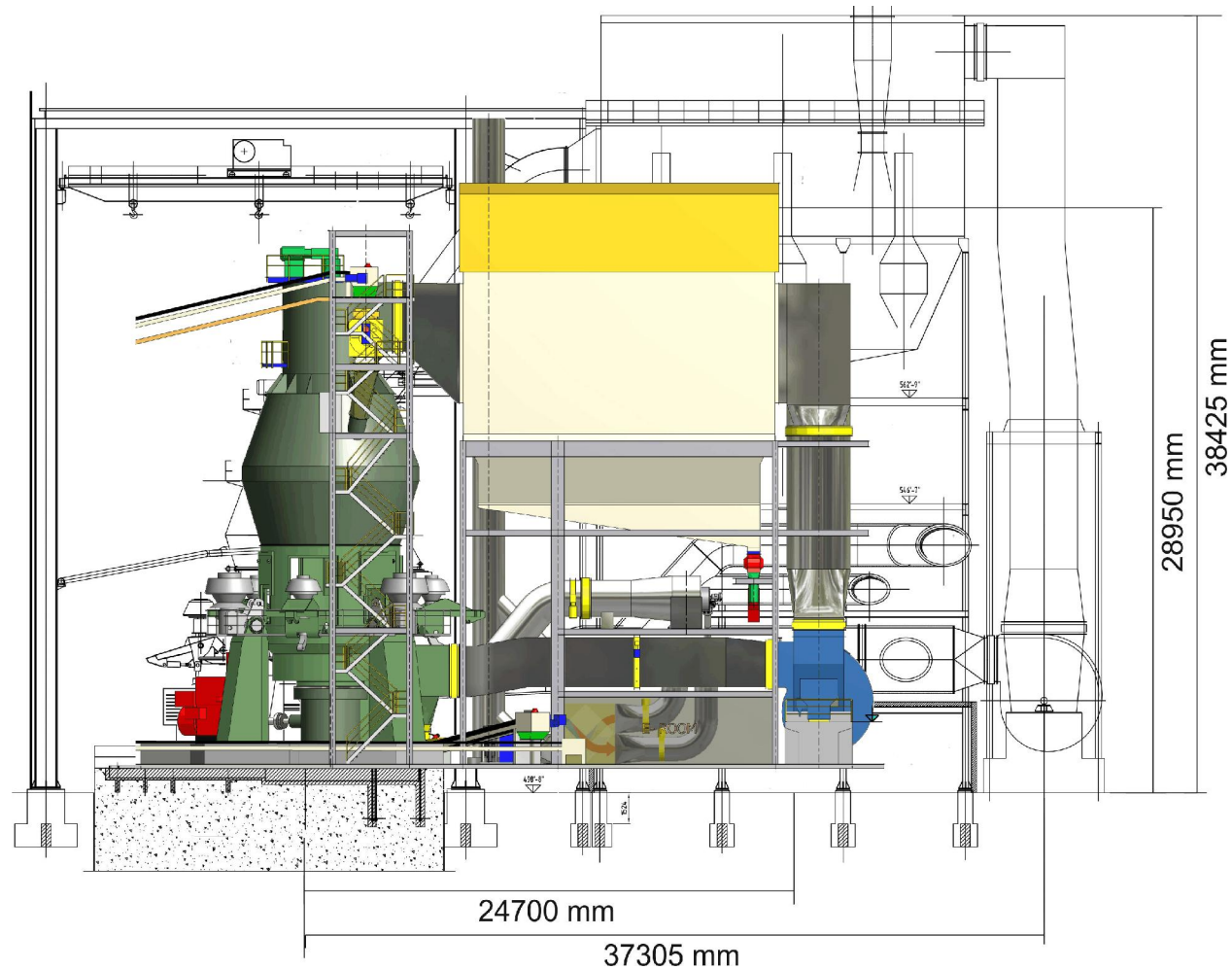


New classifier generation - LDC



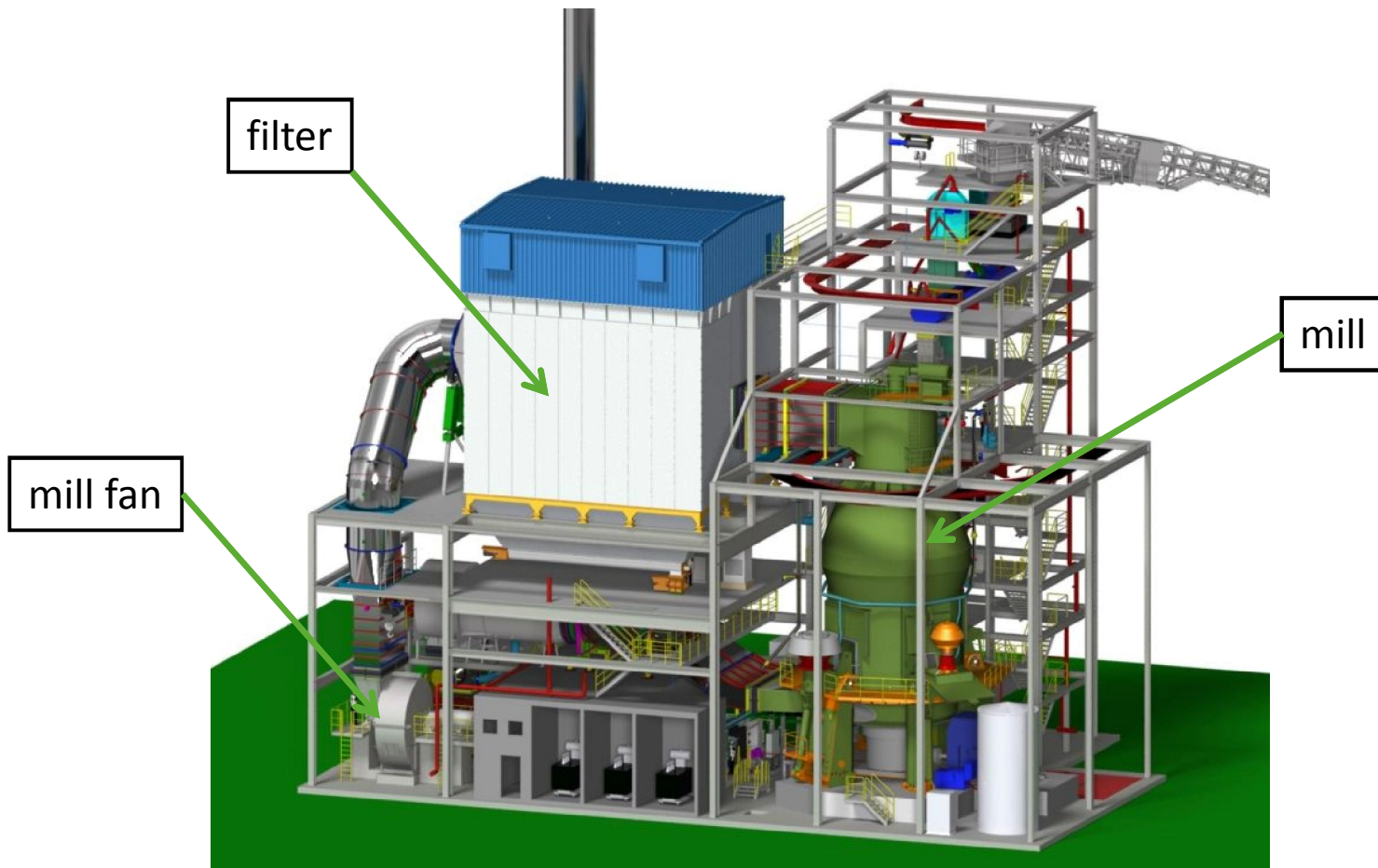
LOESCHE cement mills

Compact plant design



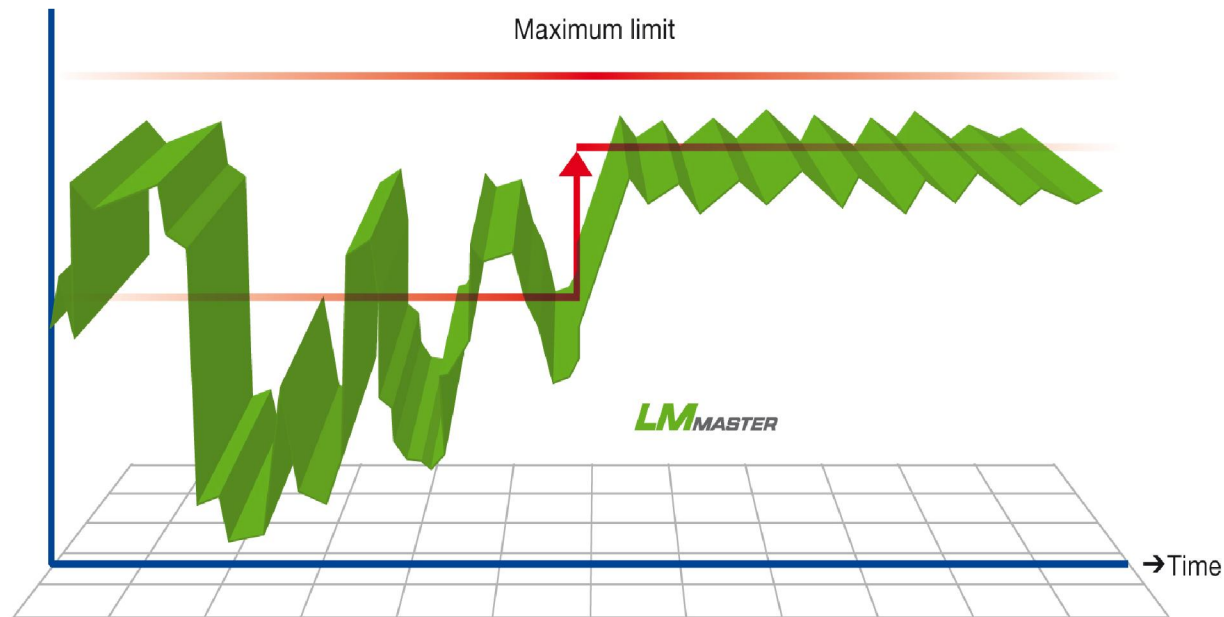
LOESCHE cement mills

Compact plant design



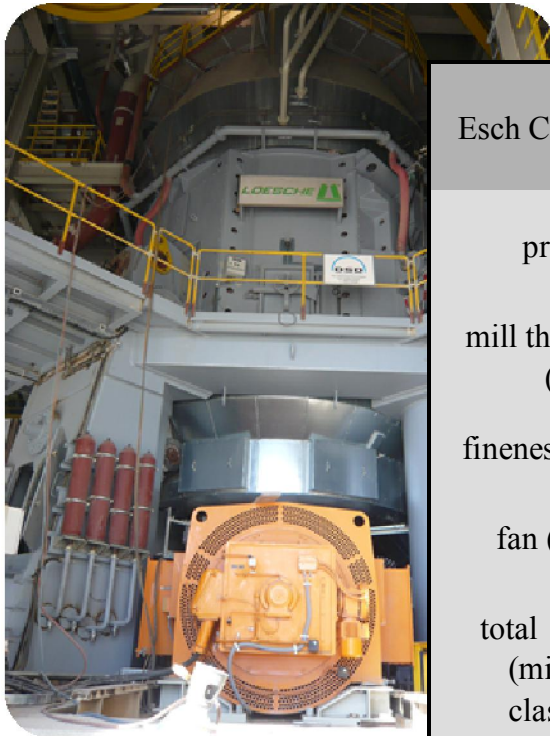
LOESCHE cement mills

LM-Master control system



controlled variable	constraint variable	manipulated variable	disturbance variable
eg. fineness, outlet temperature	eg. vibrations, motor load	eg. feed, classifier speed, grinding pressure	eg. feed moisture, grindability, wear

Operational data



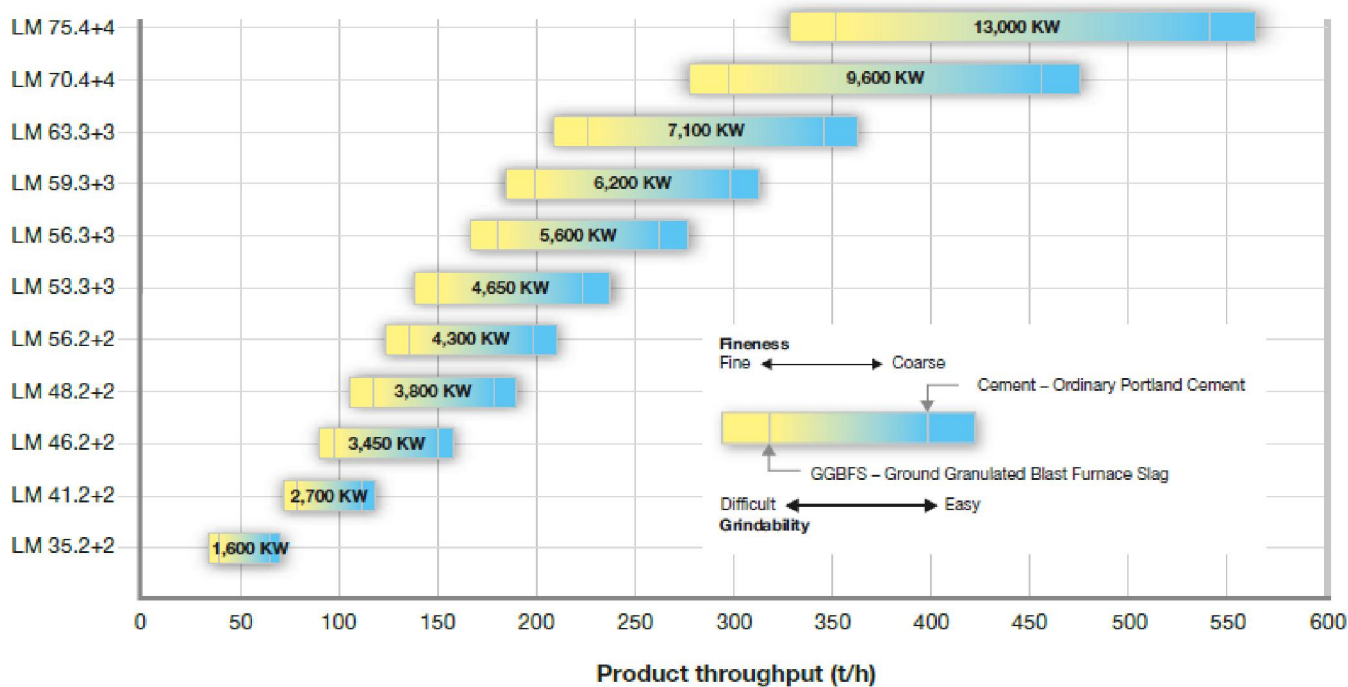
		* LM 46.2+2						
Esch Clinker								
product	GGBS	CEM I	CEM I	CEM II/A-S	CEM II/B-S	CEM III/A	CEM II/B-M	
mill through-put (t/h)	~ 120	~ 125	~ 85	~ 122	~ 80	~ 85	~ 155	
fineness (Blaine)	4100	4000	4800	4000	4600	5100	3400	
fan (kWh/t)	4.0 - 4.8	4.5 - 5.5	--	--	--	--	3.8 - 4.3	
total (kWh/t) (mill, fan, classifier)	26 - 27	25 - 26	--	--	--	--	20 - 21	

* 2010/2011 operational data

Available cement mill sizes



LM-CS models with details of structural dimensions, product throughputs and driving power (approx. values)



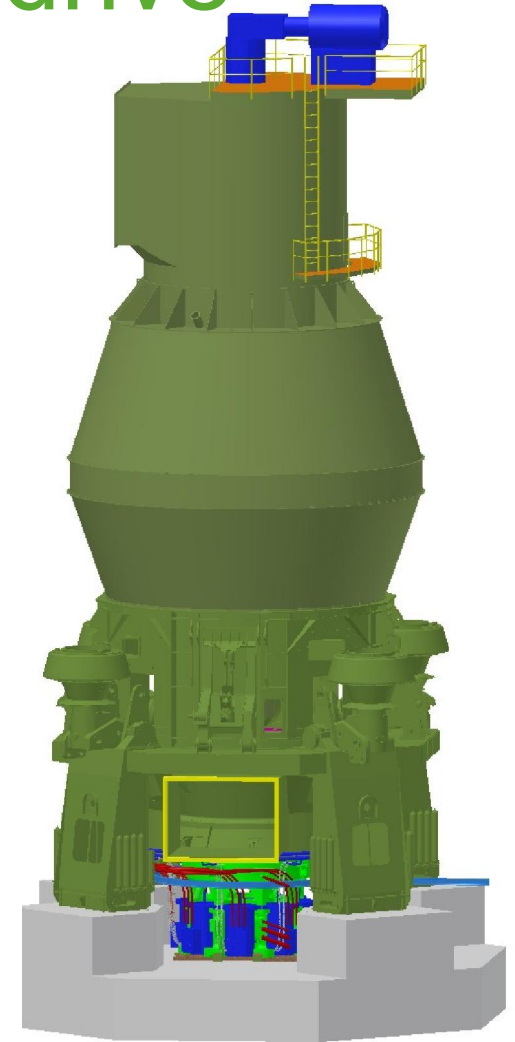
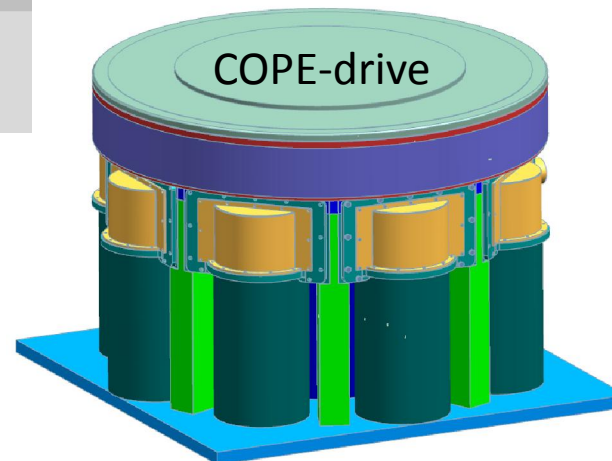
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Concept for large capacities

LM 70/75.4+4 with COPE-drive

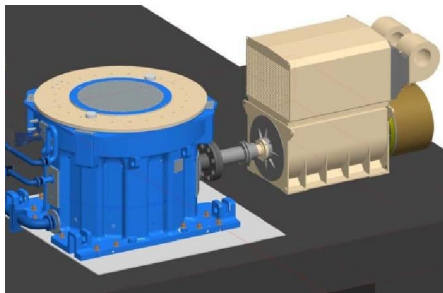
Technical data

LOESCHE Mill Type	LM	70/75.4+4
GRINDING TRACK OUTER DIAMETER	m	7.0/7.5
NUMBER OF ROLLERS	--	4 S + 4 M
MEAN ROLLER DIAMETER	m	~2.7/2.9
MILL MOTOR CAPACITY	kW	Up to 13.000

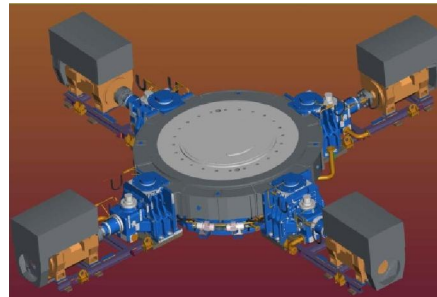


Concept for large capacities

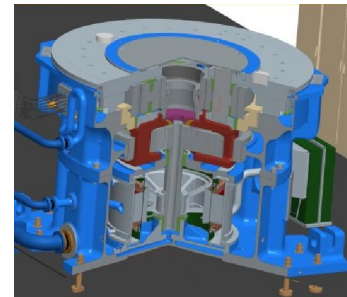
Drive systems



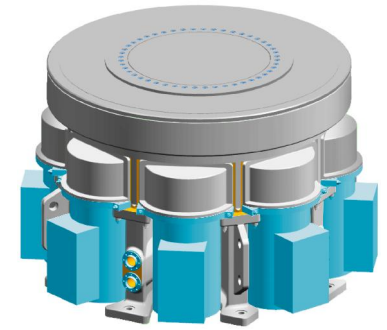
Conventional
drive



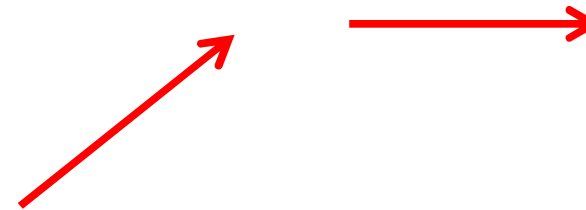
Siemens MultiDrive



Siemens EMPP



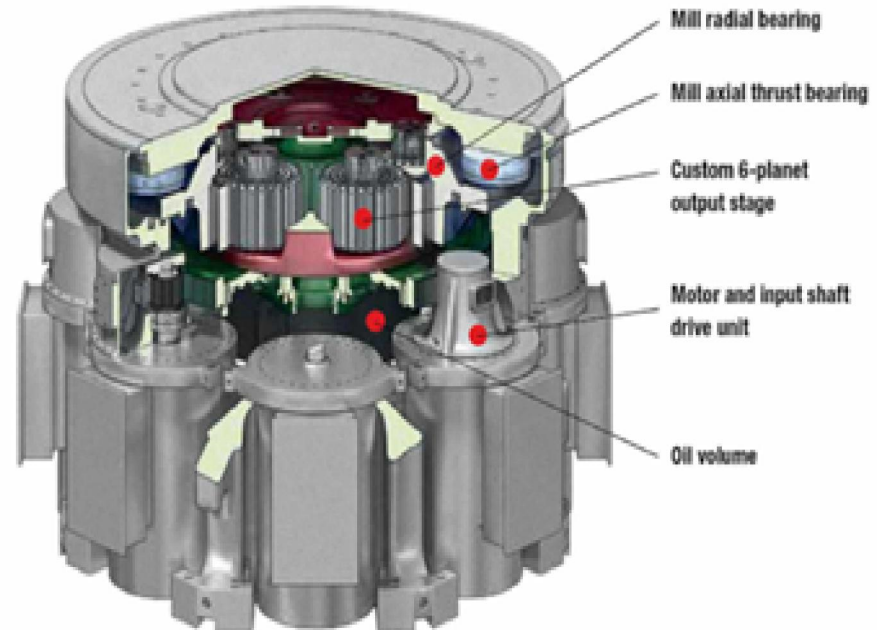
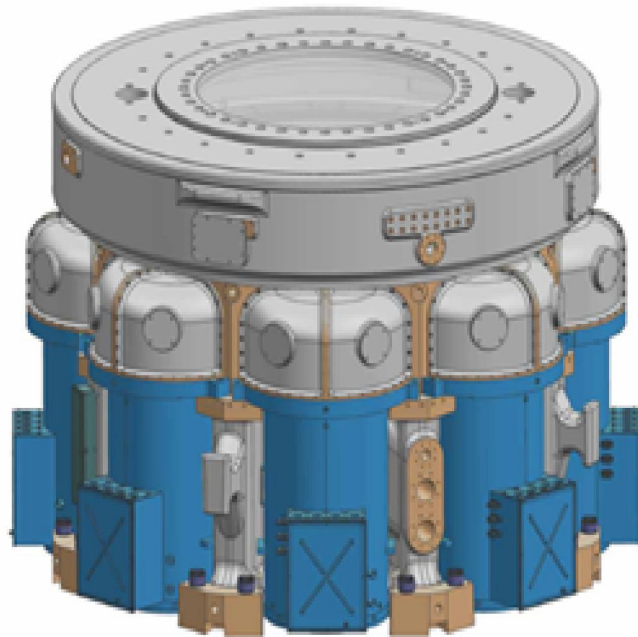
Renk COPE



Concept for large capacities

COPE-drive (1)

(COPE = Compact Planetary Electric drive)

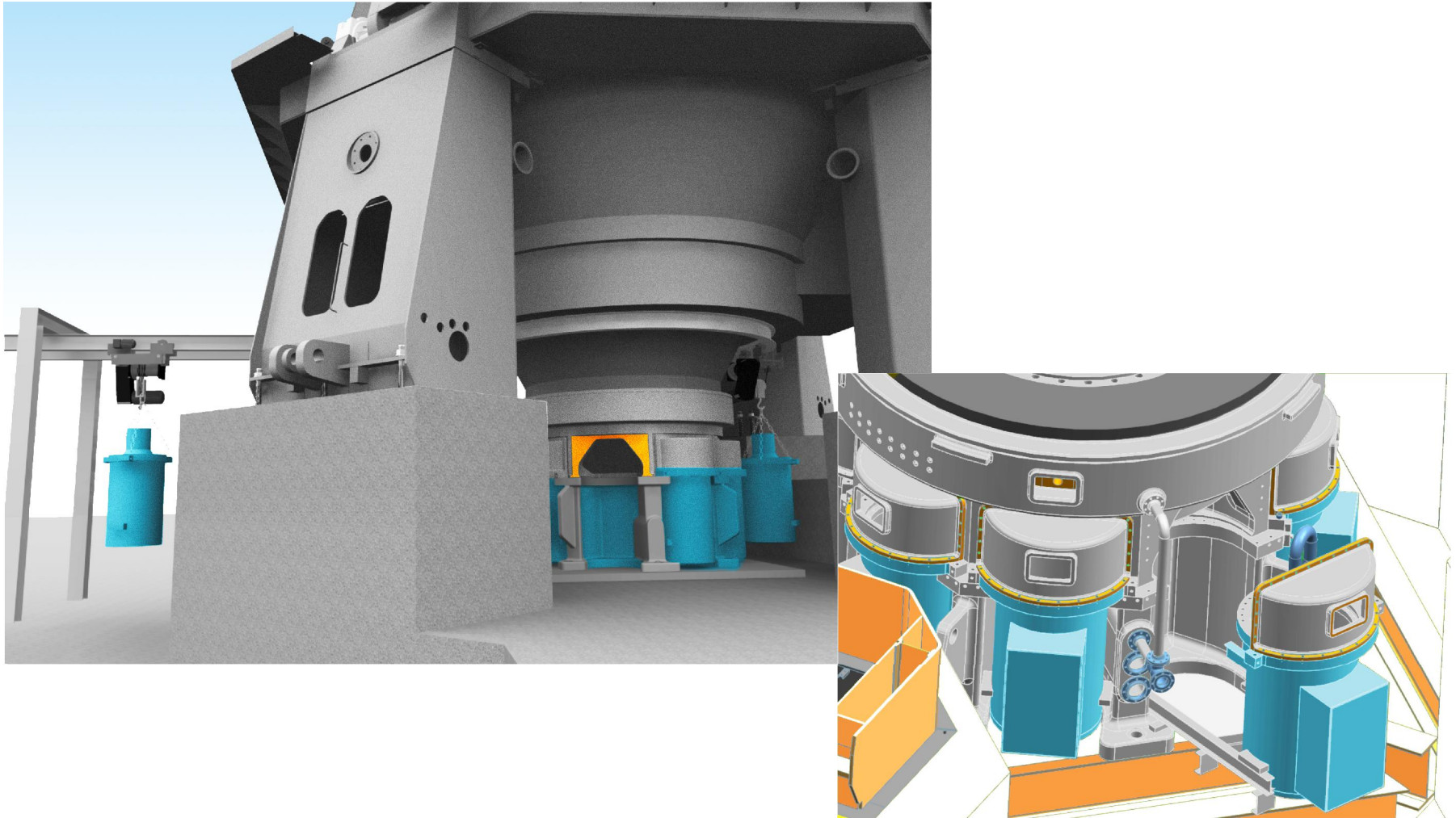


- UP TO 13 MW
- 2-STAGE DESIGN
- DRIVEN BY 4 TO 8 CAGE IND. MOTOR
- WITHOUT OR WITH VSD
- LOW OR HIGH VOLTAGE CAGE INDUCTION MOTORS

- NO BEVEL GEAR
- MAINTAINABLE WHEN INSTALLED UNDER THE MILL

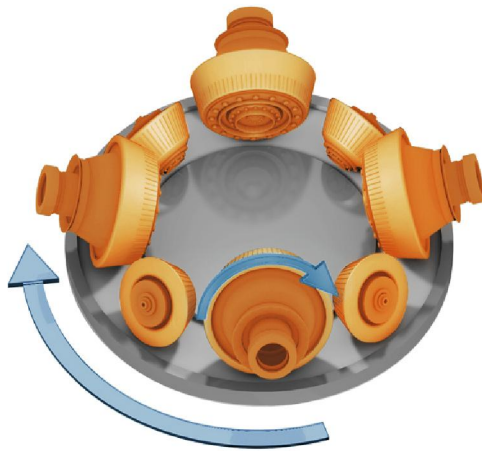
Concept for large capacities

COPE-drive (2)

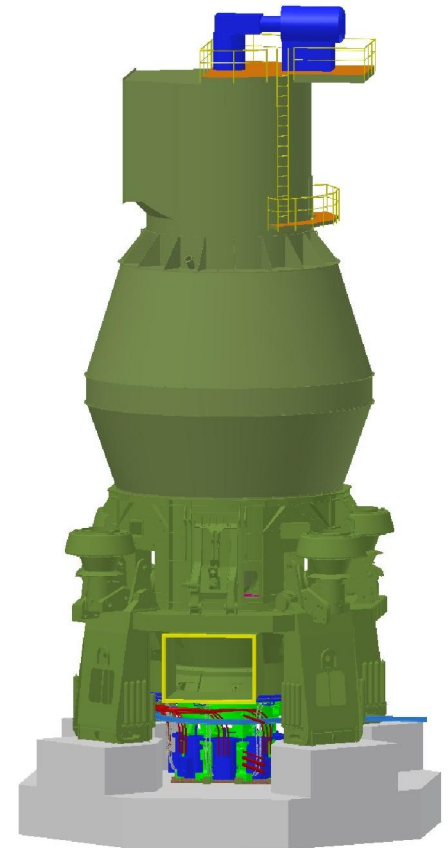


Concept for large capacities

4+4-system

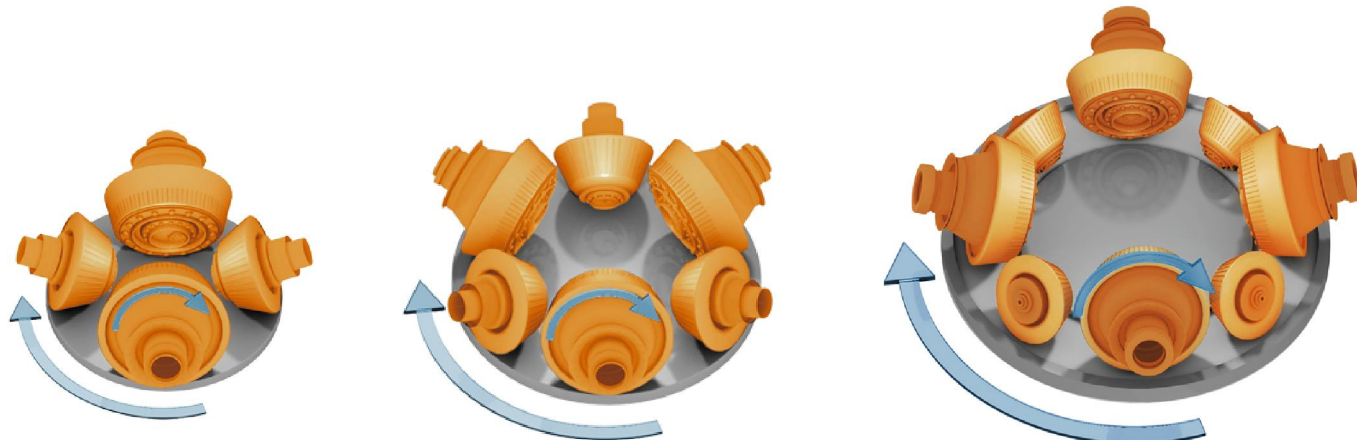
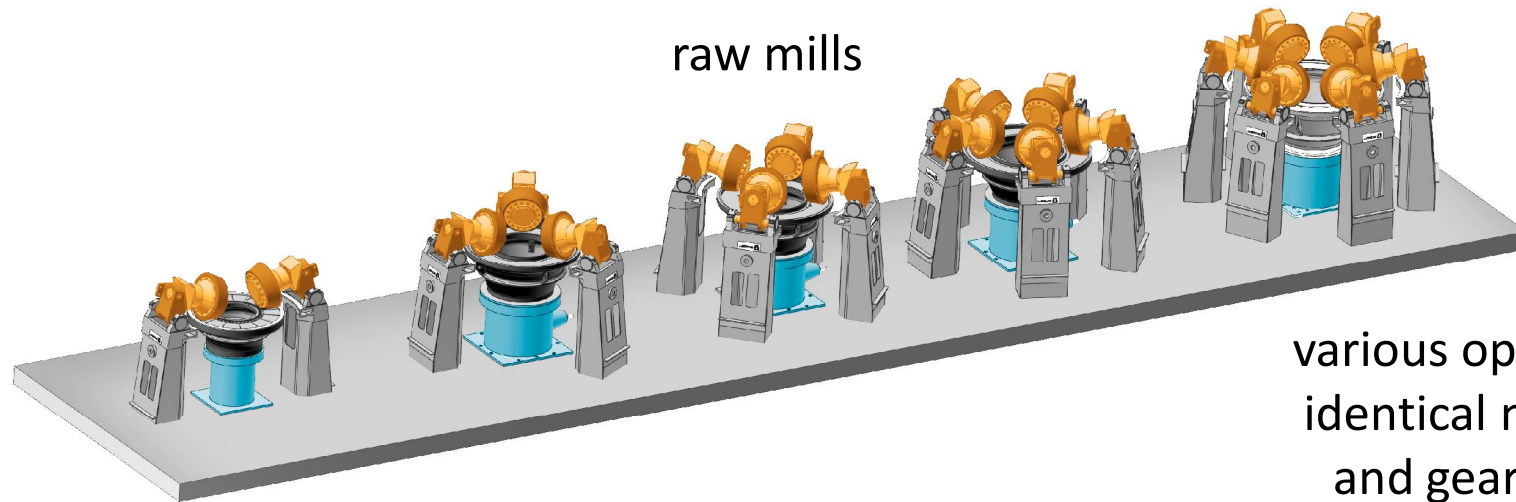


4-roller-cement mill can
be operated with 2
rollers at 60% of the
installed capacity



Concept for large capacities

Unification concept



cement mills

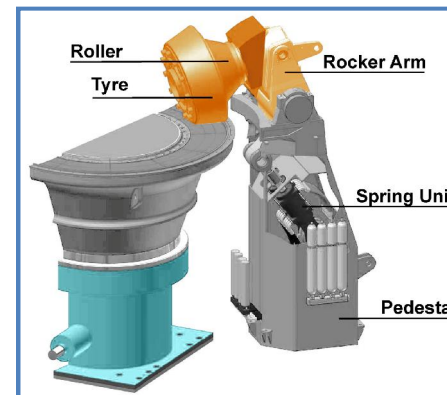
Concept for large capacities

LM 70.4+4 & LM 70.5

LOESCHE UNIFICATION CONCEPT - EXAMPLE			
LOESCHE Mill Type	LM	70.4+4 CS	70.5 RM
GRINDING TRACK OUTER DIAMETER	m	7.0	7.0
NUMBER OF ROLLERS	--	4 S + 4 M	5 M
MEAN ROLLER DIAMETER	m	2.68	2.68
ROLLER WIDTH	m	0.765	0.765
Mill capacity	tph	340/ 410	520

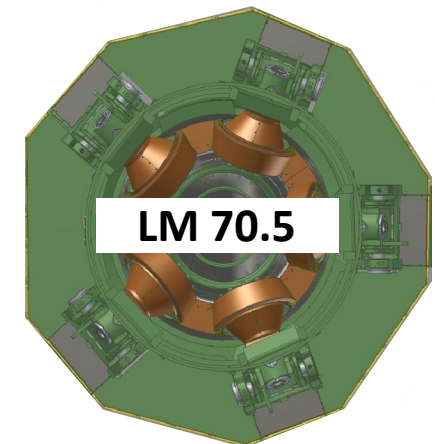
Identical

- Roller
- Rocker arm
- Spring assembly



Exchangeable

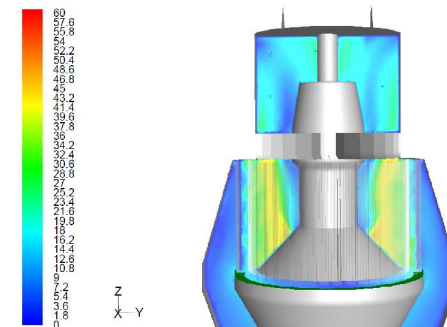
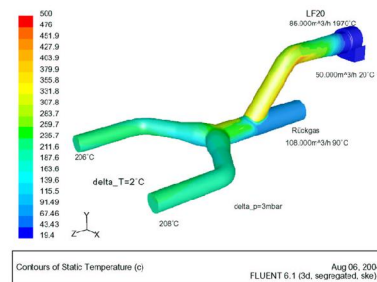
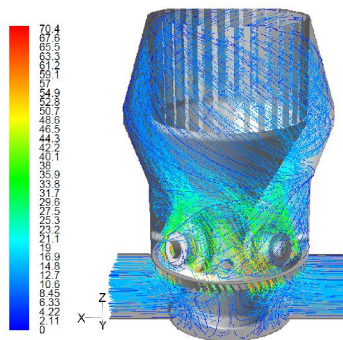
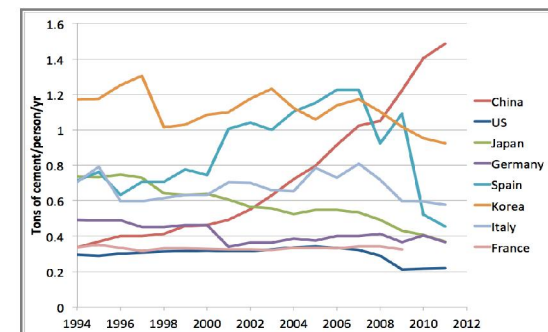
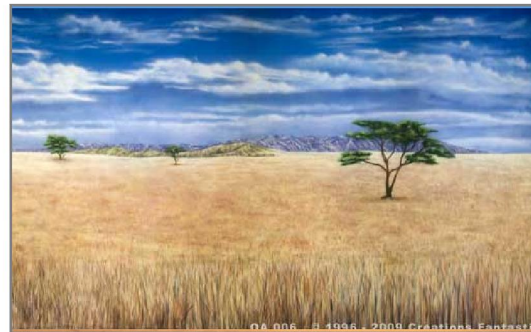
- Gearboxes
- Motors



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Summary/ Outlook

Partner for the industry



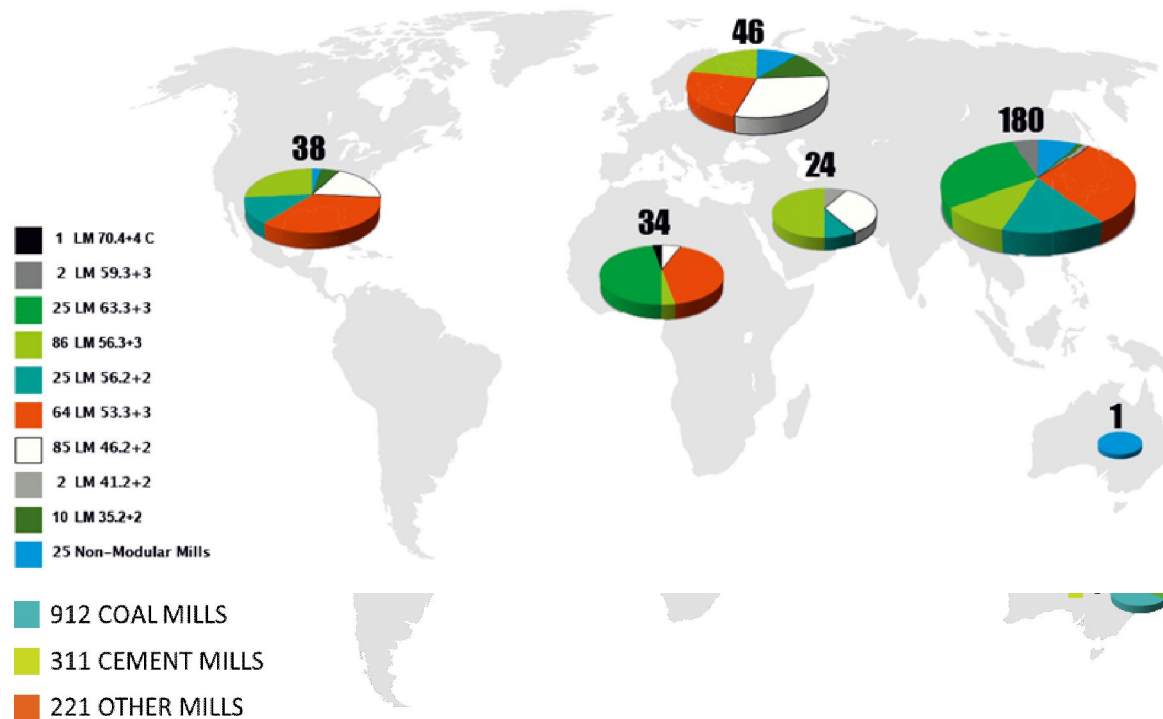
References Vietnam



Location	LM Type
Cam Pha	1*LM 46.2+2 C
Song Thao	1*LM 46.2+2 C; 1*LM 38.4
Hon Chong	2*LM 46.2+2 C; 1*LM 46.4; 1*LM 27.2 D
Phuc Son	2*LM 46.2+2 C; 1*LM 48.4
Binh Phuoc	1*LM 53.3+3 C
Phu Huu	2*LM 53.3+3 C
Thi Vai	1*LM 56.2+2 S
Xuan Thanh	1*LM 56.3+3 C
Tan Truong	1*LM 63.3+3 C; 1*LM 69.6; 1*LM 43.4 D
Hai Phong	1*LM 40.4; 2*LM 23.2 D
Bim Son	1*LM 46.4; 1*LM 56.4; 1*LM 35.3 D
Phu Son	1*LM 46.4
Song Thao	1*LM 20.2 D
Nghi Son	1*LM 35.3 D

References worldwide

323 Loesche cement mills worldwide



Summary/ Outlook

Partner for the industry

