

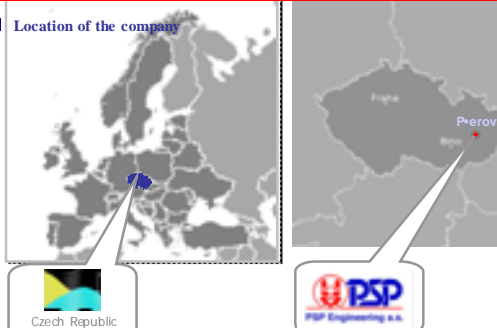


PSP Engineering a.s.

IKN

Pyroprocess Technology


PSPKIN lines



Location of the company

Czech Republic

PSP Engineering a.s.



The history of the PSP Engineering - highlights

- 1852** - Establishment of the Heinek - Mendl Company – the first machinery production in Perov
- 1951** - Establishment of the national enterprise Perovské strojířny
- 1990** - Transformation of Perovské strojířny into the joint-stock company
- 1991** - Creation of the new company PSP Engineering
- 1995** - Transformation of PSP Engineering into the joint-stock company with 100% shareholder Perovské strojířny a.s.
- 1998** - Creation of the Production Division in PSP Engineering a.s.
- 1999** - Change of the owners and increase of equity capital of the PSP Engineering a.s.
- 2003** - PSP Betelligungs GmbH, a sister company of the IKN GmbH, has bought the majority stake of PSP Engineering



Manufacturing Premises



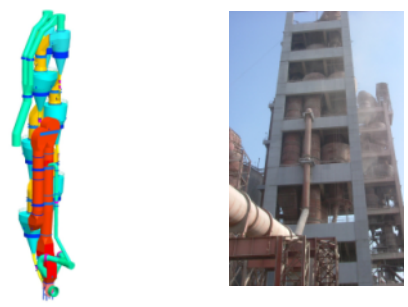
Our Esteemed Customers:

Who choose PSP Engineering?

- § Holcim
- § Lafarge
- § Heidelberg Cement
- § Alas International
- § Colacem
- § Italcementi
- § Dyckerhoff
- § João Santos Group
- § Sagar Cements
- § Andhra cements
- § Voltampex

1960's in India:
Madras cements
UP Cements, Churk
Satna Cements

LUCY 6 Stage Preheater with Precalciner – Sagar Cements, India – 4500 TPD – 2008



Total preheater tower Height is only 114.2m

TSP

Preheater Cyclones

9.2m Dia at 5 Stages 7.4m Dia Top Stage Twin Cycloner

TSP

Dip Tube

5th & 6th Stages - Segmented Thimbles

TSP

Splash Boxes

TSP

Raw Meal Flap - Counter weight type

No Bearings - Oscillates on Vedge.

TSP

State of art Calcining Channel

TSP

NOx Reduction

The image shows a schematic diagram of a calciner system on the left, with a yellow section indicating a specific component. To the right is a photograph of a tall industrial tower structure. The PSPRI logo is visible in the bottom left corner.

Andhra Cements, India

Existing pre-heater Tower

Upgraded from 3600 TPD To 5600 TPD in Year 2010

4 Stage K-Line, 5 Stage C-line Kiln Modification & IKN Pendulum Cooler

The Plant is under commissioning

A 3D perspective rendering of a tall, multi-stage industrial tower structure, colored in shades of blue, red, and yellow. The PSPRI logo is visible in the bottom left corner.

Alternative Fuel firing in Calciner

Evolution

1. Low Volatile Low quality fuels
2. Higher portion of Alt Fuel firing
3. Any kind of Fuel- including Solids like, Tyre chips, MBM, Wood, & Plastics etc.
4. Still Reliable Burning process

The PSPRI logo is visible in the top left corner.

Calcining Stages for Alternative fuel usage

KKS - Type

Modified KKS - Type

Two diagrams showing the internal structure of calcining stages. The left diagram is labeled 'KKS - Type' and the right is 'Modified KKS - Type'. Both show a vertical structure with multiple stages and a central shaft. The PSPRI logo is visible in the bottom left corner.

For low volatile and low quality fuel like Petcoke

For Higher portion of AF

Calcining Chamber

A 3D perspective rendering of a complex industrial chamber with multiple stages and a central shaft, colored in shades of red, yellow, and blue. The PSPRI logo is visible in the bottom right corner.

Calcining Chamber - SCC Type

Different type of Alt fuels & Coarser fractions

Reliable Burning process

A 3D perspective rendering of a different industrial chamber design, colored in shades of blue and yellow. The PSPRI logo is visible in the bottom right corner.

SCC - Performance



Fuel	LHV (MJ/kg)	Kiln		Calcining			
		Kiln burner		Kiln		SCC	
		[%]	[th]	[%]	[th]	[%]	[th]
Coal	31.80	19.68	2.10	4.89	0.5	13.12	1.40
SAF	19.30	11.57	2.00	0	0	16.96	2.96
MBM	17.88	34.17	6.48	0	0	0.00	0
Sum		65.23		4.89			30.08
Conditions of the kiln line operation		with bypass					
Calculated calorific consumption		approx. 3 580 kJ/kg of clinker					
Portion of alternative fuels to the kiln		approx. 62.5%					

PSPKIn line

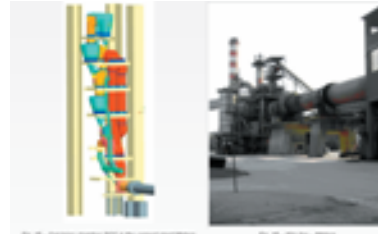


Fig. 10 - Calcining kiln SCC at the cement plant (left)

Fig. 11 - Kiln line (right)

Parameter		
Capacity	104	2 200
Heat consumption with bypass	kJ/kg cl	3 187
Crushed tires	of heat consumption	≤ 30
Fuel		petroleum-coke
NOx @15% O ₂ - (dry)	mg/Nm ³	≤ 500
Outlet clinker temperature	°C	≤ 70 + ambient
Fly ash from the preheater	g/Nm ³	≤ 60

Alternative Fuel firing in Calciners



Proven design

Continue to Innovate

Committed to Deliver Quality