



KILN INSPECTION

AND SOLUTION

## KEY BENEFITS

### **KILN INSPECTION**

Kiln Inspection is considered a critical part for kiln preventive maintenance. A periodical hot kiln inspection has multiple benefits as follows:

- Extended kiln life and higher reliability
- Reduced kiln stoppages due to unforeseen problems
- Reduced production loss and maintenance cost
- Better preparation for planned maintenance
- Alignment can be done during normal kiln operation

# **SCOPE**OF SERVICES

- Kiln Axis
- Kiln Shell Ovality
- Kiln Shell Crank
- Kiln Drive
- Mechanical Condition of Tyre and Roller

Apart from our kiln specialists, we have a comprehensive hot kiln inspection service by using special/ advanced measurement tools & equipment; Starting from periodically identifying the indicative symptoms leading to the predictive failures, our specialists can early find out root causes and indicate the degree of severity for further taking an immediate action.









All advanced measurement analysis for the lists as mentioned above shall be carried out by experienced specialist team, during normal kiln operation, with special/ advanced tools & equipment and visual inspection. After that, the follow-up meeting shall be held for the brief of kiln inspection with immediate action recommendations.

Finally, the full report shall be submitted to our customers for the comprehensive kiln inspection within 7-10 days.

### HOW TO APPROACH

	SYMPTOMS	IDENTIFYING ROOT CAUSES	RECOMMENDATIONS		
	<ul><li>High temperature on roller shaft</li><li>Abnormally high wear rate at tyre and supporting roller</li></ul>	• Kiln axis deviation	Kiln axis correction		
	<ul><li>Brick lining under tyre break/ short life-time</li></ul>	• Kiln shell ovality/ migration	• Slide shoe replacement/ insert- ing shim plate under slide shoe		
	<ul> <li>Supporting roller shaft break</li> <li>High vibration at kiln support</li> <li>Short life-time of kiln refractory (inlet/outlet/between supports)</li> </ul>	Kiln shell crank/ deformation	Kiln shell replacement		
	<ul> <li>Thrust roller bearing damage/ shaft break</li> <li>High temperature at thrust roller/ thrust roller break</li> <li>Abnormally worn out at tyre side guide block</li> <li>Short life-time of kiln refractory (inlet/outlet/between supports)</li> </ul>	Kiln axial loading unbalance	Kiln axial balance correction		
	<ul> <li>Abnormally worn out profile at tyre and roller surface (convex/ concave/ taper)</li> <li>Tyre and roller break</li> <li>Pitting on tyre and roller contact surface</li> <li>Short life-time of kiln refractory (inlet/ outlet/ between supports)</li> </ul>	Mechanical problem     of tyre and support- ing roller	<ul> <li>Tyre and supporting roller grinding</li> <li>Supporting roller inclination correction</li> <li>Tyre and supporting roller replacement</li> <li>Kiln axial balance correction</li> </ul>		
GEAR	<ul> <li>High vibration at girth gear and pinion</li> <li>Girth gear and pinion tooth contact surface wear out/ pitting/ deformation</li> <li>Girth gear and pinion tooth break</li> </ul>	Mechanical problem     of girth gear and     pinion	<ul> <li>Girth gear and pinion reversal/ replacement</li> <li>Girth gear and pinion realignment</li> <li>Girth gear root clearance correction</li> </ul>		

KILN INSPECTION SERVICE MENU		n axis	er station/ Prism/ Measuring wheel	Ovality/ Migration	lity	Kiln shell crank	DM Tools/ Laser polar	Kiln axis loading balance	Touching thermometer/Inclinometer	Mechanical condition of tyre and rolle	Measuring wheel/ IDM Tools	Girth gear and pinion alignment	DM Tools	7. Kiln drive vibration	Vibration analysis
No.		1. Kilh	_aser	9.0	Ovality	% ≅	No.	4. i∑	ono_	5. M	Леа	6 G	M		/ibra
1	Hot kiln inspection	•	•	•	•	•	•	•	•	•	•	•	•		•
2	Brick lining under tyre broken, short life-time	•	•	•	•	•	•								
3	High temperature at kiln bearing	•	•					•	•						
4	Girth gear and pinion high vibration, tooth broken					•	•					•	•	•	•
5	Thrust roller bearing and shaft broken					•	•	•	•						
6	High vibration at supporting rollers, shaft break					•	•								
7	Thrust collar high temperature, thrust collar broken							•	•	•	•				
8	Kiln move up, Zero thrust roller pressure							•	•						
9	Tyre crack	•	•			•	•	•	•						

## KEY BENEFITS

**KILN SOLUTION** 

- Extended service life of kiln
- Increased plant operational availability
- Reduced breakdown maintenance
- Better plan and preparation for spare parts
- •On the job training and knowledge sharing with maintenance staffs

# Not only the comprehensive service packages for Kiln Inspection are we ready to offer, we are the One Stop Service for Kiln Solution. Key benefits for kiln solution services are as follows:

#### **SCOPE OF SERVICE**



**Kiln Inspection** 



**Kiln Adjustment** 



No.	<b>Description</b>					
1	Kiln Inspection					
1.1	Hot kiln inspection	1.2	Cold kiln inspection			
•	Kiln axis deviation	•	Kiln shell thickness check by UT			
•	Kiln shell ovality/ migration	•	Girth gear and pinion inspection			
•	Kiln shell crank/ deformation		- Tooth contact condition inspection and record			
•	Kiln axis loading balance		- Root clearance check			
•	Mechanical of tyre and supporting roller	•	Supporting roller shaft crack check by UT			
•	Mechanical of Girth gear and pinion	•	Girth gear clamping bolts crack by UT &			
•	Kiln drive vibration		Retightening			
•	Visual inspection	•	Thrust roller shaft crack check by UT			
		•	Kiln drive alignment check			
		•	Bearing side gap check (Need to open top			
			cover of bearing housing)			
		•	Visual inspection			

2	Kiln Adjustment
•	Kiln axis correction
•	Kiln axial balance correction
•	Girth gear root clearance correction

3	Kiln Maintenance and Overhaul
•	Kiln shell replacement (Fabrication, preassembly and installation)
•	Girth gear and pinion reverse/ replacement
•	Girth gear realignment
•	Tyre replacement
•	Tyre and supporting roller surface grinding
•	Supporting roller replacement
•	Supporting roller bearing scraping
•	Tyre alignment (Wobbling) & Side guiding gap adjustment
•	Slide shoe replacement/ insert shim plate under slide shoe
•	Kiln drive realignment



Hot kiln inspection



**Every 2 years** 



Surface grinding for tyre & roller



Every 4-5 years



Kiln shell replacement



Every 6-8 years



Girth gear reversal



Every 8-10 years



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