

# Calderys presentation

Litet kort om rätt förutsättningar för att beställa rätt murverk vid underhåll – hur kan man tänka?

3 april, 2025

Thomas Höjer

Financial figures per January 2025



# Calderys globalt – en överblick

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« One of the biggest refractory solutions provider in the world »

**150+** år har gruppen funnits

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**30+** länder har vi kontor i med försäljning till **100+** länder

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**~50** tillverkande fabriker på alla **5** kontinenterna

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**5,800+** anställda

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**50+** nationaliteter representerade i vår arbetsstyrka

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# « Kort om rätt förutsättningar för att beställa rätt murverk vid underhåll – hur kan man tänka? »



## Tidplan för oss idag: 25 min

- Hur fungerar “kedjan”?
- Hur hittar jag rätt partners?
- Hur skall jag anbudsfråga?
- Vad innebär olika råvaror i eldfast?
- Hur håller jag tidplan? Kan jag snabba på något?
- Hur kan jag spara in på delmoment – idag skall vi diskutera kortare torkeldning via “Fast-Dry”

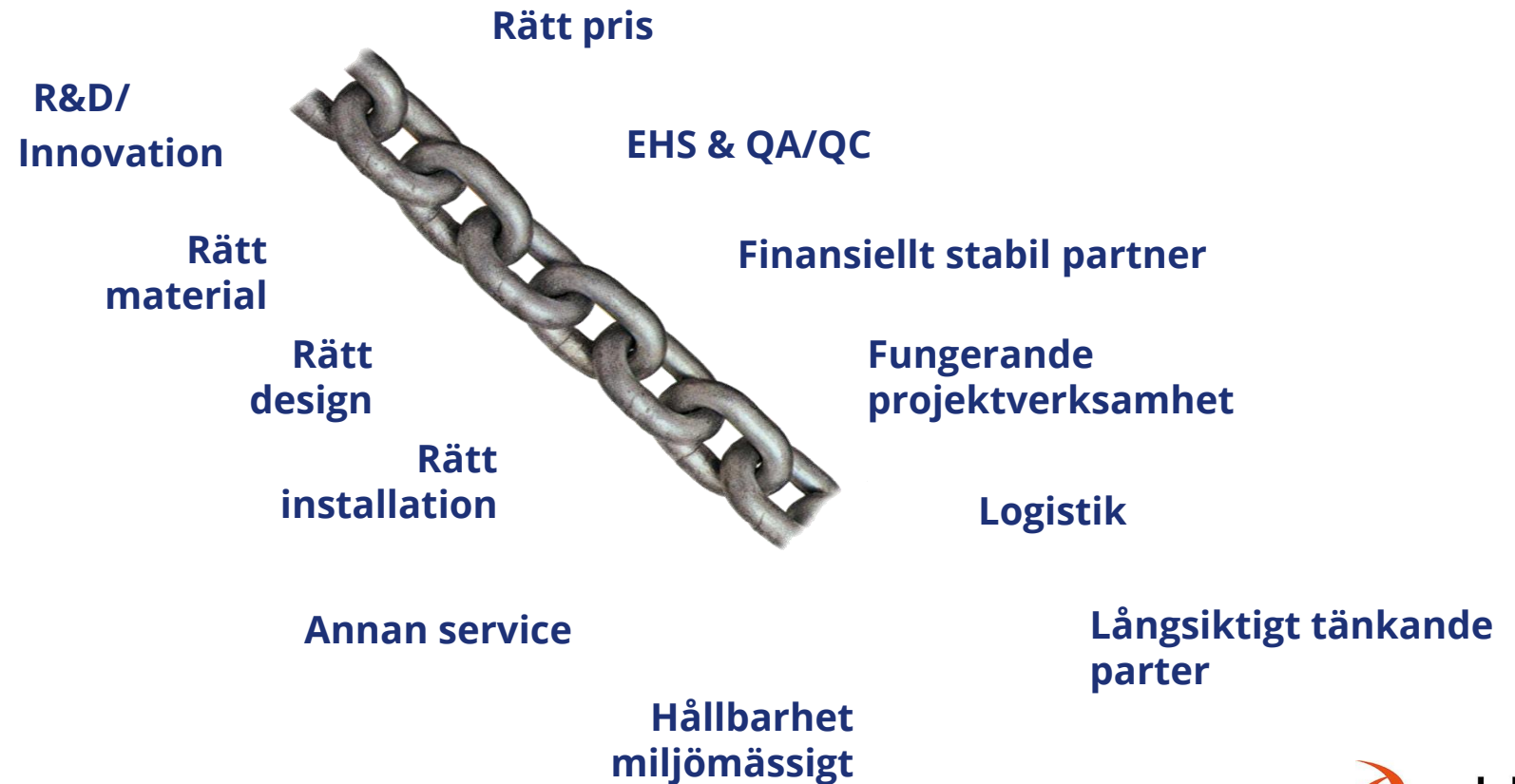


# Alla "länkar i kedjan" måste finnas och hålla

Hur beställa rätt murverk vid underhåll?

Några av alla val som måste bli rätt hos alla parter under hela stoppet...

...för att säkerställa planerad och kortast möjliga tid ur drift med längsta möjliga driftskampanjer på pannan



# Olika råvaror – olika tekniker

Standard Document B&I CoE

Only to be used  
when downloaded !

BOILERS &  
INCINERATORS  
Standard refractory lining concept

Revision Summary  
3.1 – Self-gel bond  
3.2 – Tiles, bricks, ex-spar, contacts  
3.3 – Budget to fit alternatives and steel qualities  
3.4 – Coal type boilers additions and fuel hazards (Feb, 2024)



CALDE™ SPRAYCAST SiC 70

CALDE™ SPRAYCAST LM 74 A



## Råvaror

- Kiselkarbid – SiC – hög värmeledning
- Mullit – starkt, alkalitåligt
- Chamotte – alkalitåligt

## Installationstekniker

- Bilning vid rivning – långsamt, hand- & tubskador
- Vattenbildning - snabbt
- Gjutning/pumpning – bra, långsamt
- Torrstrutning – mindre bra, snabbt
- Spraycasting – bra, snabbt, stor maskin

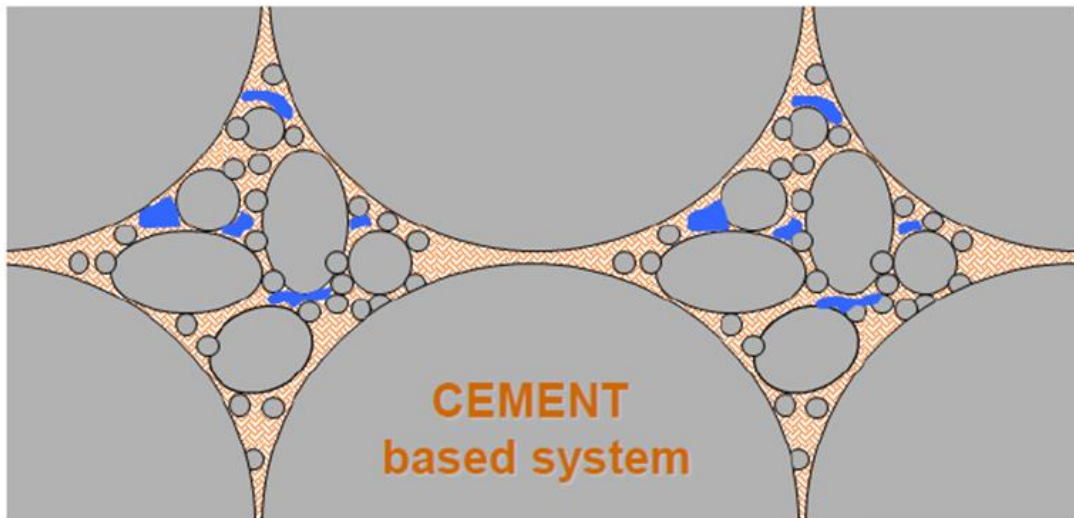


# Torkeldning av kund – som inte gjorts rätt...?



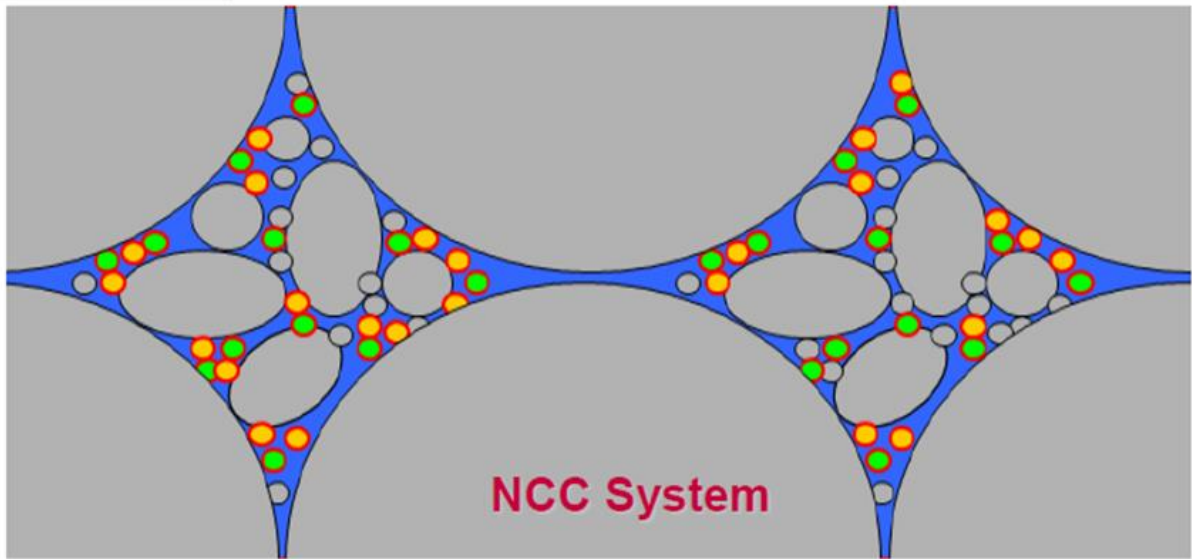
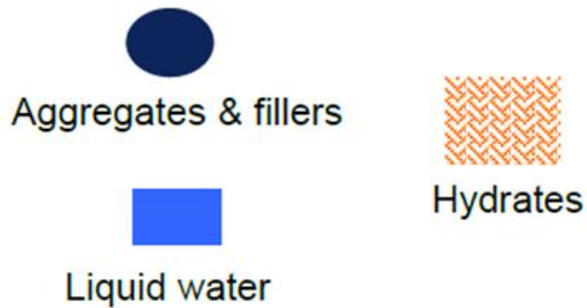


# Hur minskad risk torkeldnings-skada - både QD och sol-gel (NCC) permeabla och tål "torkeldningsmissar" bättre än LCC/MCC



"VOLUME" effect  
New volume creation "trapping"  
free Water  
High level of chemically bonded water

NCC har andra nackdelar installationsmässigt och har låg grönstyrka etc.



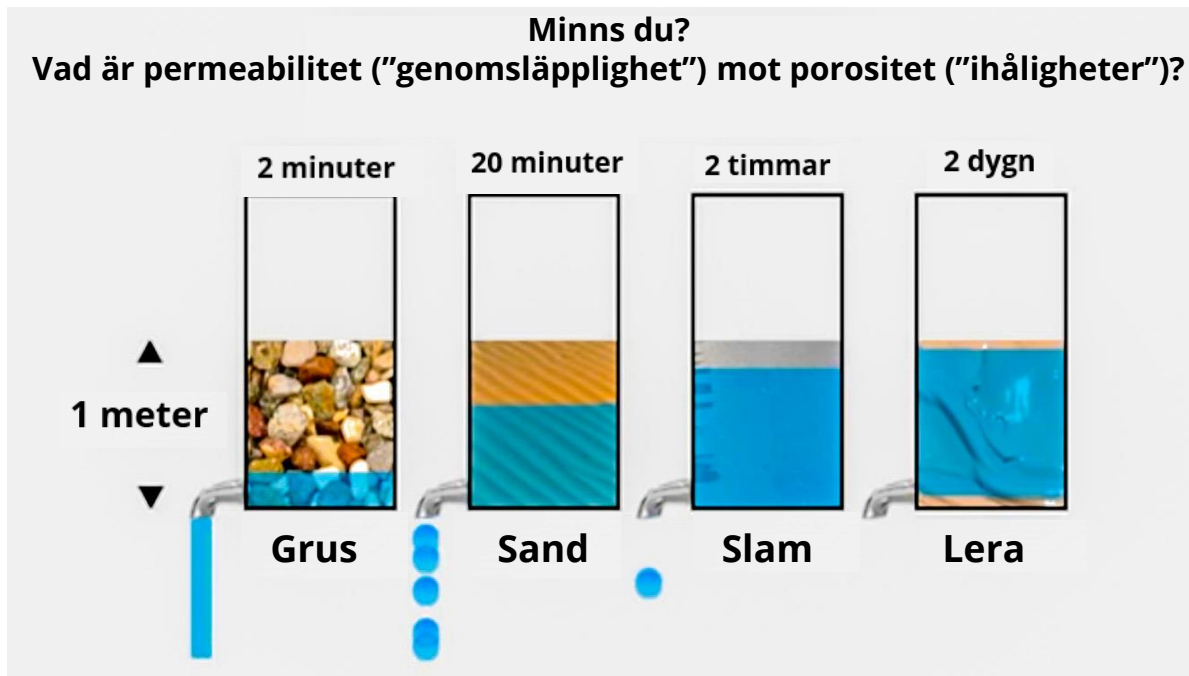
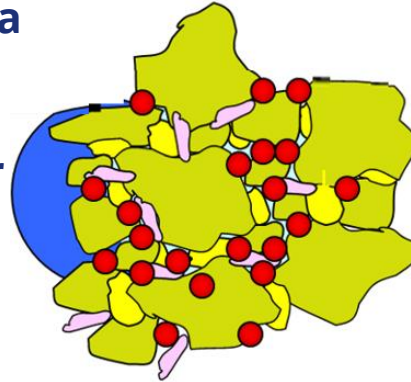
"SURFACE" effect  
"No Trapping" effect  
High amount of free water

"Teaser":  
Undrar du vad FD och SD är?

# Nytt från Calderys: FD och SD – vad är då detta?

Vi har upfunnit ett sätt att öka permeabiliteten på befintliga cementbundna massor utan att öka porositeten.

Detta ger en "FD"-massa samma egenskaper som förr, dock med undantaget att den kan torkeldas på 1 dygn i stället för 5 dygn!



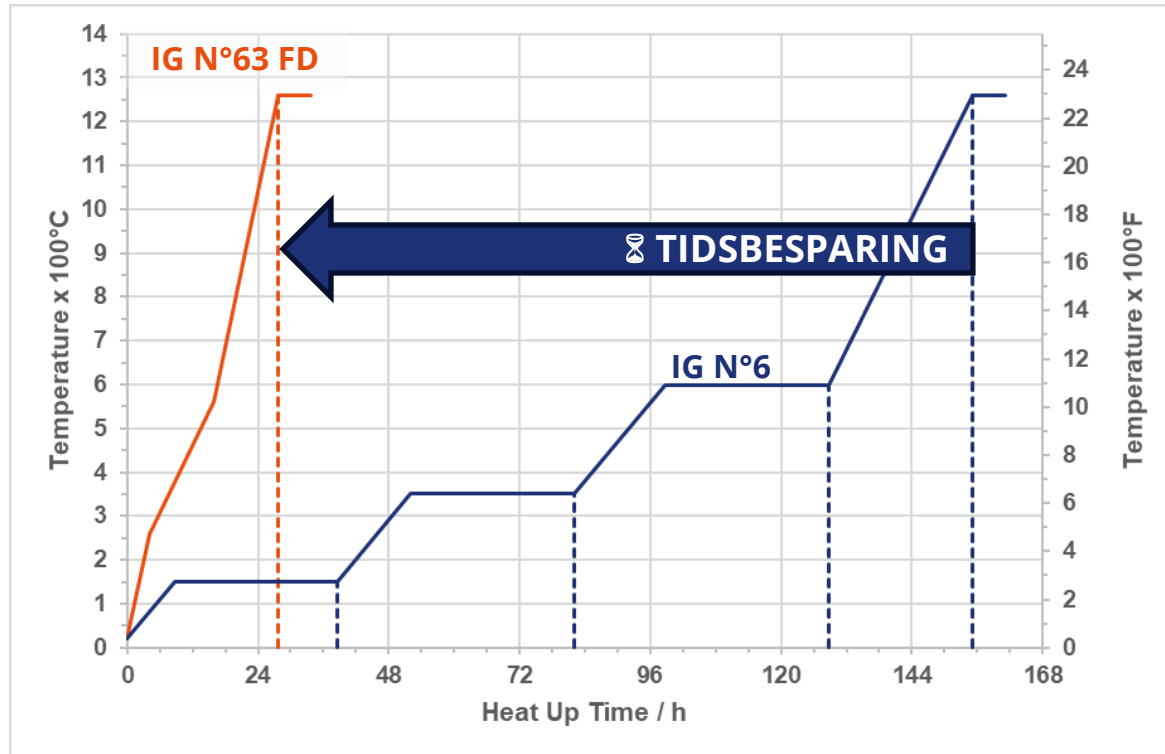
C:a 1500 ton FD installerade under 2024



# CALDE® FD & SD Produkter – man installerar som vanligt och...

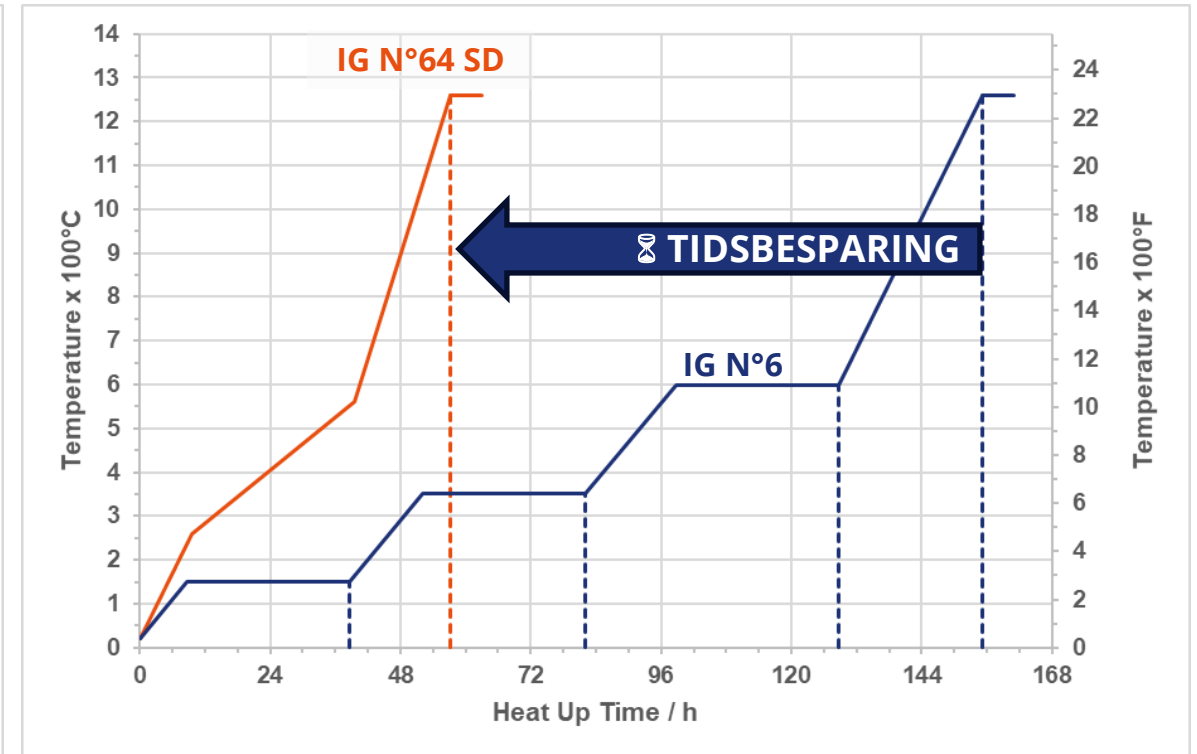
Kunden sparar här mer än 72 timmar att nå 1,200°C – dock krävs 24 timmar härdning

## Fast Dry (FD)



300 mm infodringstjocklek (om tunn infodring – 24 timmar med FD)

## Safe Dry (SD)



300 mm infodringstjocklek

# Vad får man via ALKON® & CALDE® FD produkterna?



ALKON® FD & CALDE® FD produkter tillåter effektivt avlägsnande av vatten, vilket minskar risken för eventuell ångexplosion under torkeldningsprocessen

Ökad tillgänglighet och produktion i pannan - Installeras som förr med alla metoder. Samma fysikaliska prestanda som icke-FD

Lägre volymer och kortare användningstid av torkeldningsbränslen (främst fossila bränslen)

Inga extra komponenter eller lagring krävs och inga ytterligare säkerhetsrisker

# Tack för mig – nu tar vi frågor?

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Visit [www.calderys.com](http://www.calderys.com) for more information

or connect with us:



[www.linkedin.com/company/calderys/](http://www.linkedin.com/company/calderys/)



[www.facebook.com/calderys/](http://www.facebook.com/calderys/)



# Appendix



# Some on the references up to 2024

## Industrial solid waste rotary kiln in Japan 2024 – CALDE® FLOW LF 50 A FD & CALDE® FLOW LM 60 A FD trial result

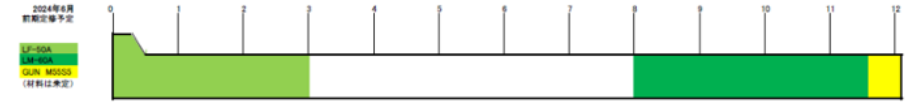
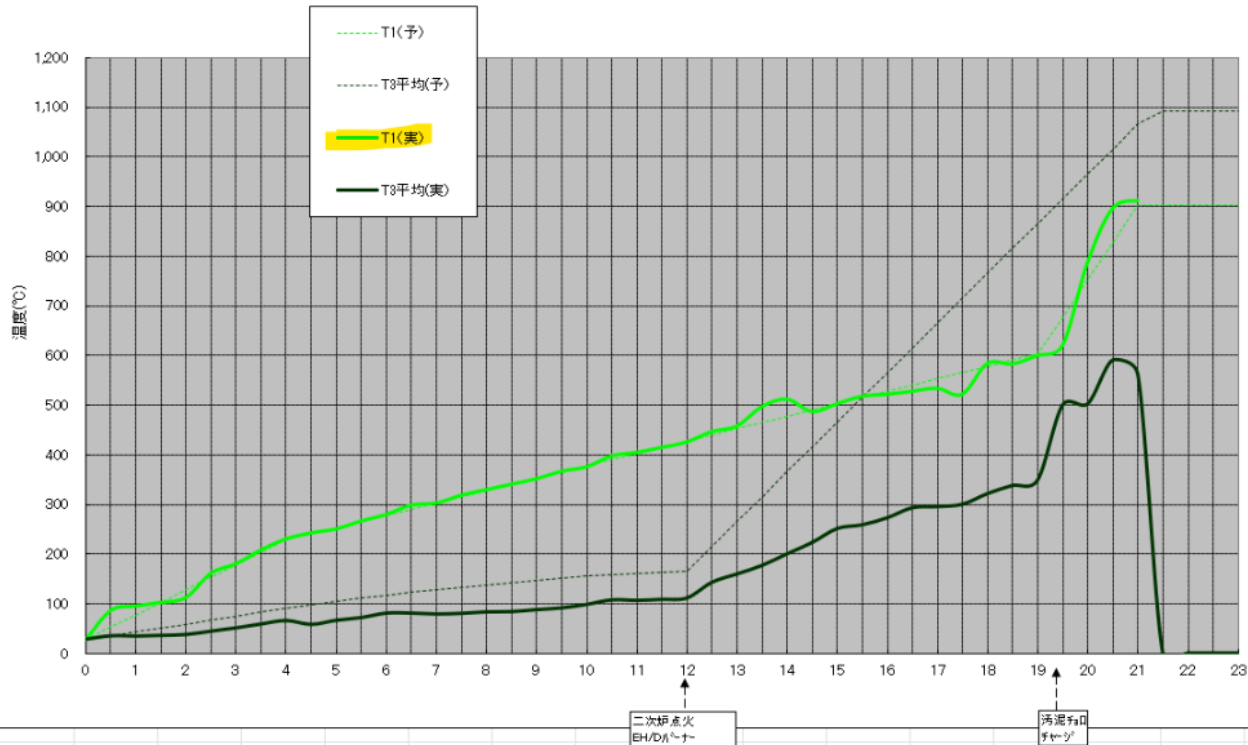
Subject: CALDE FLOW LF 50 A FD & LM 60 A FD trial result

Dear Divyendu san, Uwe san, (Dear Japan sales team, FYI)

Please see the attached actual dryout profile of CALDE FLOW LF 50 A FD / LM 60 A FD trial.  
If you have any question, please let me know!

T1 : green one is the actual temperature profile, it was controlled as below.

- 1) 25 - 225degC : 50degC/h (4h)
  - 2) 225 - 600degC : 25degC/h (15h)
  - 3) 600 - 900degC : 150degC/h (2h)
- After 900degC (21h) : start full-charge operation



-Temperature was monitored at existing thermocoupling located on the rotary kiln, located on 10,000 mm from fuel feeding and +50 - 100mm from refractory surface



# Some on the references up to 2024 - dry-out 24 hours

CALDE® FLOW LM 74 A FD at Windbox CFCB Boiler for 100 MW, North Sumatra after 12 months operation, no need to repair.

But because the tubes need to be replaced, so our FD also replacing with a new one (still same type FD)- thickness 54 mm single layer



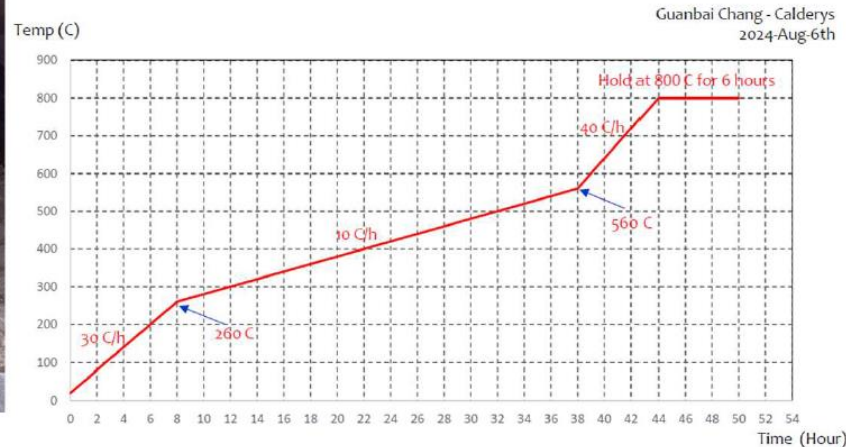


# Some on the references up to 2024 - SD-type

## Trial details and Observations



Trying Out schedule for ALKON CAST 204 SD (350x450x230 mm)



**Precast Size:** 350 x 450 x 230 mm, used for the aluminum furnace bottom.

**Dry-Out Process:** Follow Calderys' Installation Guidelines No. 64 for Safe Dry (SD) Medium Cement Castables. The dry-out process has been successfully completed.

**Observation:** Nothing abnormal was observed during the dry-out. The color of the precast made with ALKON CAST 204 SD appears slightly brighter than the standard ALKON CAST 204.

**Subject:** Report on ALKON CAST 204 SD Precast Drying Trial

Dear Divyendu,

I hope this mail finds you well.

We have successfully completed a trial of drying out a precast made with ALKON CAST 204 SD in Thailand. Please find the enclosed report for your reference.

As the next step, we plan to use ALKON CAST 204 SD to repair the side wall of an aluminum tower melting furnace in Thailand in October 2024.

Best Regards,

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[www.calderys.com](http://www.calderys.com)

# Some on the references up to 2024 list below is only a few

Dry Out Status	Region	Country	Customer	Site	Segment	Equipment	Product	Application Area	Thk (mm)	Tonnages (MT)	Installation date	Due date	In operation
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Holding Furnace	ALKON® Cast LB 85 FD	Outlet Area	Max 318 mm	2	Sep-23	Sep-23	Yes
Completed	EMEA	Netherlands	Attero	Attero Wijster.	Incinerators	Grate Incinerator	CALDE® Spraycast SiC 30 R FD	roof inlet zone	65	3	Apr-24	Oct-24	Yes
Completed	EMEA	Netherlands	Attero	Attero Wijster.	Incinerators	Grate Incinerator	CALDE® Spraycast SiC 70 FD	first pass	65	3	Apr-24	Oct-24	Yes
Completed	EMEA	Germany	Novelis	Voerde	Aluminum	Round Melter	ALKON® Cast LM 70 FD	Upper Jamb	300	33	Apr-24	Oct-24	Yes
Completed	EMEA	Germany	Novelis	Voerde	Aluminum	Round Melter	ALKON® Cast LC 95 FD	Walls around burners	300	22	Apr-24	Oct-24	Yes
Completed	East Asia Pacific	Japan	Kowa Seiko	Kowa Seiko	Incinerators	RK Incinerator	CALDE® Flow LF 50 A FD	Fuel Inlet Zone (0-3 m)	250	27	Jun-24	Dec-24	Yes
Completed	East Asia Pacific	Japan	Kowa Seiko	Kowa Seiko	Incinerators	RK Incinerator	CALDE® Flow LM 60 A FD	Outlet Zone (8-11 m)	250	32	Jun-24	Dec-24	Yes
Completed	EMEA	France	Arcelor Mital	Dunkerque	Iron	Iron runner	DUNDE® Cast Gibram FD	Covers	250 (TBC)	12	Dec-23	Apr-24	No
Completed	EMEA	France	Arcelor Mital	Dunkerque	Iron	Iron runner	CALDE® Cast Gibram FD	Covers	250 (TBC)	12	May-24	Aug-24	No
Completed	EMEA	Serbia	Radijator-Injezering d.o.o.	Radijator-Injezering d.o.o.	Boilers		CALDE® Cast MF 52 CO SD	Biomass boilers		38	Jun-24	Mar-25	Yes
Completed	EMEA	France	Damrys	Veolia Noyant	Incinerators	Grate Incinerator	CALDE® Cast Gibram FD	Feeder walls (uncooled)	115	9.2	Apr-24	Oct-24	Yes
Completed	East Asia Pacific	SEA / Thailand	UACJ	UACJ Thailand	Aluminum	Melting/Holding furnace	CALDE® Cast Gibram FD	Slope area (repair)	400~500	TBC	Aug-24	Jan-25	Yes
Completed	EMEA	Germany	Hadrlich/Lober	Borbet Sachsen	Aluminum	Shaft Furnace	ALKON® Cast Hymor 80 AL SD	Arch	Upto 200 mm	2	Jul-24	Jan-25	Yes
Completed	East Asia Pacific	China	Kesman Qinhuangdao	Kesman Qinhuangdao	Aluminum	Shaft Furnace	ALKON® Cast Hymor 80 AL SD	Side Walls (Repair)	230	1.5	Jul-24	Jan-25	Yes
Completed	EMEA	United Kingdom	Altrad	Scunthorpe RHFB	Iron & Steel	Reheat Furnace	CALDE® Cast AF 470 FD	Furnace Door, Burner Pa	200(door), 250 (burner area)	25	Aug-24	Feb-25	Yes
Completed	EMEA	Austria	Voestalpine Tubulars	Kindberg	Iron & Steel	Reheat Furnace	CALDE® Cast LX 58 SD	Floor, Floor openings, side	125 (floor), 65 (openings), 220 (side walls)	36	Sep-24	Mar-25	Yes
Completed	EMEA	Austria	Voestalpine Tubulars	Kindberg	Iron & Steel	Reheat Furnace	CALDE® Cast F 65 FD	Floor openings	65	3	Sep-24	Mar-25	Yes
Completed	EMEA	Austria	Voestalpine Tubulars	Kindberg	Iron & Steel	Rotary hearth Furnace	CALDE® Cast LT 90 SP G8 FD	Roof	180	2	Sep-24	Mar-25	Yes
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Holding Furnace	ALKON® Cast 204 SD	Hearth, inlet area	TBC	35	Sep-24	Mar-25	Yes
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Twin-chamber melting chamber	ALKON® Cast LC 95 FD	lining thickness) between the Ready shapes for the hearth, 75 mm repairs at free standing wall, belly band Free standing wall	350	20	Aug-24	Feb-25	Yes
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Twin-chamber melting chamber	ALKON® Cast LC 95 FD	shapes for the hearth.	350		Sep-24	Mar-25	Yes
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Twin-chamber melting chamber	ALKON® Cast LC 95 FD	Lower Free standing wall	530	45	Sep-24	Mar-25	Yes
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Twin-chamber melting chamber	ALKON® Cast LM 70 FD	TBC		6	Sep-24	Mar-25	Yes
Completed	EMEA	UAE	Kaefer	Beatt Incineratio	Incinerators	RK Incinerator	CALDE® Cast LA 50 SZ FD	Buner pipe, nose ring of	Nose ring (400 mm), Burner pipe (100 mm)	10	Nov-24	May-25	
Completed	EMEA	Germany	Novelis	Nachterstedt	Aluminum	Sidewell Melting Furnace	ALKON® Cast LC 95 FD	Joins (full lining thickness) between the Ready shapes for the hearth, ramp, sill ; belly band;	350	80	Dec-24	Jun-25	Yes
Completed	EMEA	Germany	Hadrlich/Lober	Borbet Sachsen	Aluminum	Shaft Furnace	ALKON® Cast LC 95 FD	Melting table, sill		9	Dec-24	Jun-25	Yes
Completed	EMEA	Germany	Befesa		Aluminum	Twin-chamber melting chamber	ALKON® Cast LB 85 FD	Hearth of side chamber	360	8	Dec-24	Jun-25	Yes