

CNUD 4000 mm LEHR - 46 % lower gas consumption

Cnud 4 000 mm - Consumption 1 day BEFORE replacing / same article and same settings.

Original : Antonini + Weishaupt burners	Data received from factory			Temp in C°:		25,0
Date	Hour	time runned	Counter	Press Bar :		0,450
Day -2	14:00			m ³ /h	m ³ /24H	Nm ³ /24H
Day -1	12:00	0,917		7,22	173,22	229,17

Cnud 4 000 mm - Consumption 1 day AFTER replacing / same article and same settings.

Changed to : G-Lehrs + Weishaupt	Data received from factory			Temp in C°:		25,0
Date	Hour	time runned	Counter	Press Bar :		0,450
Day +2	10:00			m ³ /h	m ³ /24H	Nm ³ /24H
Day +2	22:00	0,500		3,92	94,15	124,57

-45,64%

Cnud 4 000 mm - Consumption 1 day before / 1 day after replacing - same article and same settings.

Immediate result of replacing Antonini burners by G-Lehrs G5 burners in sections 1,2 and 3	
Gas consumptions received from factory - detailed per hour	Nm ³
Daily consumption before replacing :	229,17
Daily consumption after replacing :	124,57
Daily gain in consumption :	104,60

-45,64%

REPLACING BURNERS IN SECTIONS 1, 2 and 3 of a CNUD lehr 4 000 mm belt - Consumption figures coming from central registration system.

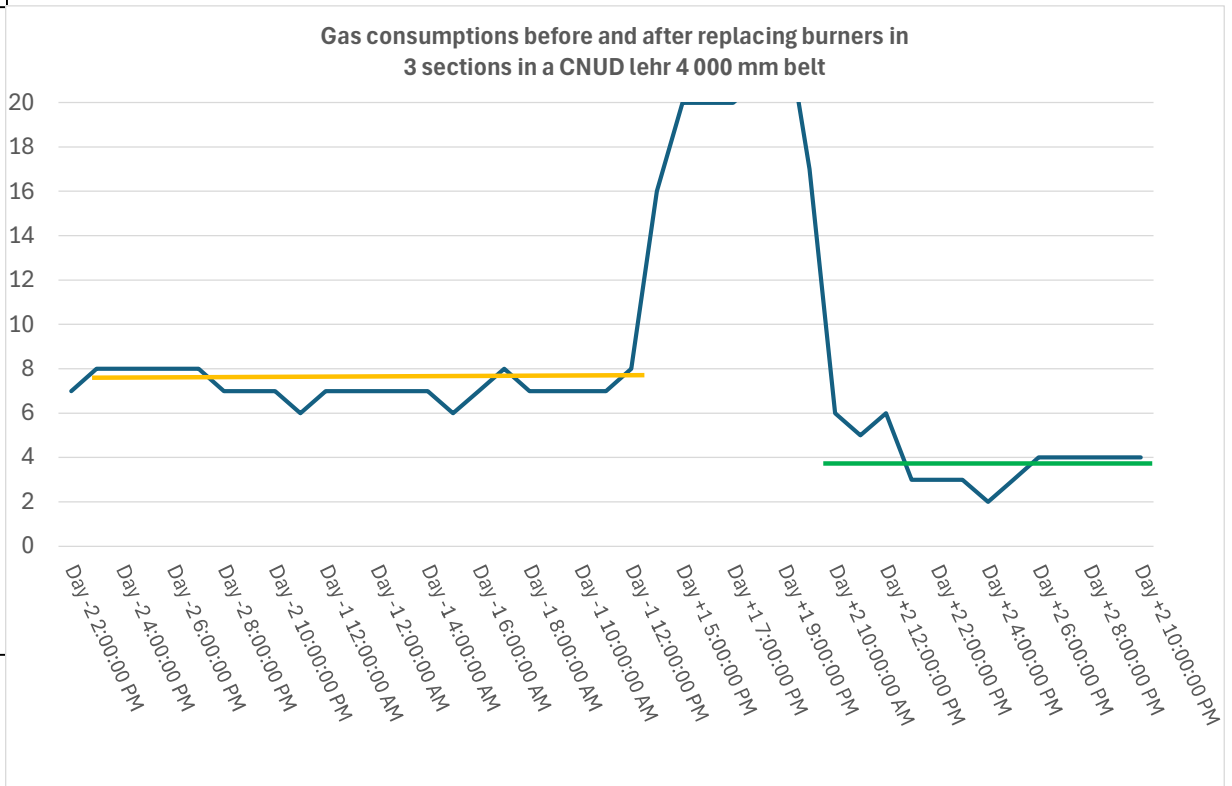
Date/time	m3 (no Nm3)	
Day -2 2:00:00 PM	7	ORIGINAL BURNERS
Day -2 3:00:00 PM	8	
Day -2 4:00:00 PM	8	
Day -2 5:00:00 PM	8	
Day -2 6:00:00 PM	8	
Day -2 7:00:00 PM	8	
Day -2 8:00:00 PM	7	
Day -2 9:00:00 PM	7	
Day -2 10:00:00 PM	7	
Day -2 11:00:00 PM	6	
Day -1 12:00:00 AM	7	
Day -1 1:00:00 AM	7	
Day -1 2:00:00 AM	7	
Day -1 3:00:00 AM	7	
Day -1 4:00:00 AM	7	
Day -1 5:00:00 AM	6	
Day -1 6:00:00 AM	7	
Day -1 7:00:00 AM	8	
Day -1 8:00:00 AM	7	
Day -1 9:00:00 AM	7	
Day -1 10:00:00 AM	7	
Day -1 11:00:00 AM	7	
Day -1 12:00:00 PM	8	
Day +1 4:00:00 PM	16	BURNER REPLACE
Day +1 5:00:00 PM	20	
Day +1 6:00:00 PM	20	
Day +1 7:00:00 PM	20	
Day +1 8:00:00 PM	21	
Day +1 9:00:00 PM	24	
Day +1 10:00:00 PM	17	NEW SITUATION
Day +2 10:00:00 AM	6	
Day +2 11:00:00 AM	5	
Day +2 12:00:00 PM	6	
Day +2 1:00:00 PM	3	
Day +2 2:00:00 PM	3	
Day +2 3:00:00 PM	3	
Day +2 4:00:00 PM	2	
Day +2 5:00:00 PM	3	
Day +2 6:00:00 PM	4	
Day +2 7:00:00 PM	4	
Day +2 8:00:00 PM	4	
Day +2 9:00:00 PM	4	
Day +2 10:00:00 PM	4	

Sect 1 : Antonini - 2 pcs
Sect 2 : Antonini - 2 pcs
Sect 3 : Antonini - 1 pc
Sect 4 : Weishaupt 1 pc
Sect 5 : Weishaupt - 1 pc
Sect 6 : Weishaupt - 1 pc

Section 1 : 2 pcs
Section 2 : 2 pcs
Section 3 : 1 pc
G-Lehrs G5 replaces :
Antonini Venturi

Section 1
2 x G5 G-Lehrs burners
Section 2
2 x G5 G-Lehrs burners
Section 3
1 x G5 G-Lehrs burner

Sections 4 - 6
no replacement
Weishaupt
burners



CNUD LEHR - 4 000 mm belt

Begin calcul		End calcul	
original situation		consumption with Antonini burners in Sections 1 to 3	
Day -2 2:00:00 PM		Day -1 12:00:00 PM	with Weishaupt burners in sections 4 - 6
Avg (m³) :	7,22	m³/H	
replacing			
Day +1 4:00:00 PM		Day +1 10:00:00 PM	
Avg (m³) :		m³/H	consumption not taken in account
after replacing			
Day +2 10:00:00 AM		Day +2 10:00:00 PM	consumption G-Lehrs G5 burners in sections 1 to 3
Avg (m³) :	3,92	m³/H	with original Weishaupt burners in sections 4 - 6
RESULT	-45,6%		

CNUD 4 000 mm - Data measured and received from factory - BEFORE REPLACING BURNERS

Belt 4 000 mm - length 36 500 mm
6 heated : 13 200 mm / 4 cooled 8 800 mm

Bottle Lightweight

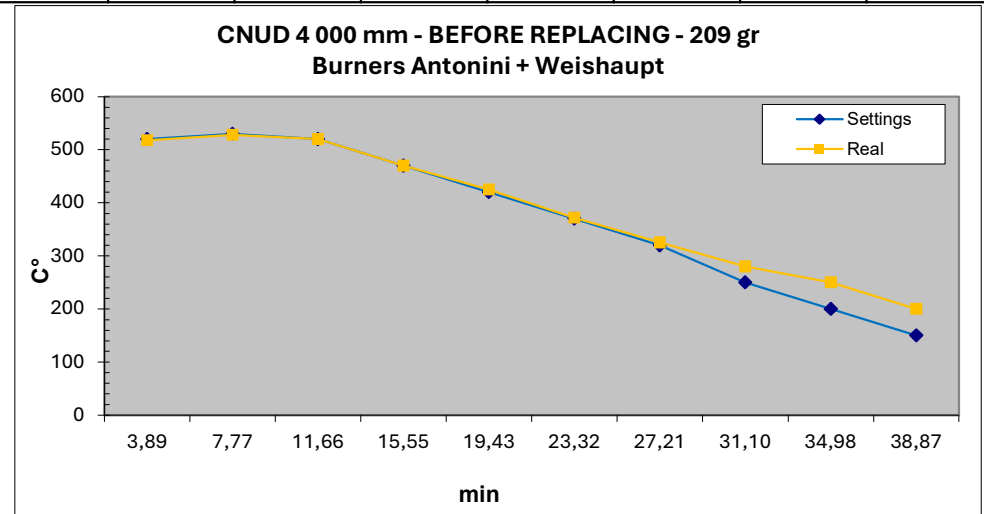
Beltwidth : 4.000 mm
Unused left side : 45 mm
Unused right side : 55 mm
Nr of art in width : 48 pcs
Nr of art in length : 1 distance : 70 mm
Beltspeed (sec) : 60 distance : 566 mm
Dim art (diam) : 60 mm
Weight art : 209 gr

distance between art in width : 21,70 mm
distance between art in length : 10,00 mm
speed of the belt : 566 mm/min
speed of the machine : 388 art / min
production per day : 117 Tons / day

Colors :	Data known or measured
machine : 16 S	Data calculated
glass :	Data estimated
burner : Sect 1 - 3 : Antonini	
Sect 4 - 6 : Weishaupt WG20N	
GAS	229 Nm ³ /d
	23,95 kWh/ton

Length	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	11000	3250	36500
Sect nr	Sect 1	Sect 2	Sect 3	Sect 4	Sect 5	Sect 6	Sect 7	Sect 8	Sect 9	Sect 10	Open	Table	
Nr contr	2	1	1	1	1	1	1	1	1	1		FAN	
Nr Burners	2 x Ant	2 x Ant	1 x Ant	1 x WH	1 x WH	1 x WH	Cool	Cool	Cool	Cool			
Nr conv fans	2	2	1	1	1	1	1	1	1	1			
Temp set	520	530	520	470	420	370	320	250	200	150			
Temp reached	518	528	520	470	425	372	325	280	250	200			
Time (min)	3,89	7,77	11,66	15,55	19,43	23,32	27,21	31,10	34,98	38,87	58,30	64,05	

Result Anneal Time above 520 C° : 11,66 min Total time
not measured Time in tunnel : 38,87 min 64,05
Cool speed 520 > 400 C° : 12,50 C° / min
Cool speed 400 > 200 C° : 10,92 C° / min



REPLACEMENT OF BURNERS

Replacing burners is done without stopping the production, the burners are replaced one by one and it takes half a day, max 1 day.
In this case the existing burners were removed on 'day 0', the new burners installed on 'day +1', in the mean time no glass was coming in.
The job was done by the factory's personnel .
On 'day + 1' the burners in the first 3 sections were replaced.
Our engineer supervised the job.

GAIN IN GAS CONSUMPTION

For every first installation we make a study (for free) of the client's situation and calculate the possible gain in consumption for the running article.
We visited this factory 3 months before but could not calculate the possible gain in consumption due to the mix Antonini - Weishaupt.
The factory decided nevertheless to replace the Antonini burners taking in account the results realized with our burners in the other lines.
We were surprised by the result 46 % gain (same article) but it probably is because Antonini burners are not designed to be used in CNUD lehrs.
Also, our burners give the possibility to measure and adjust the ideal gas / air ratio, resulting in a gain varying between 0 and 7 %.
When calculating the payback time of the investment, the price of the CO2 rights should also be taken in account.

RELIABILITY OF G-LEHRS BURNERS

Our burners practically never go in alarm, a week without an alarm is the norm.
If necessary, restarting is done at a push of the reset button or via the central supervising system.

MAINTENANCE

The burner does not need to be dismantled for inspection or repair, replacing electrodes is extremely simple and does not require disassembly of the burner.
Cleaning the fan or other parts is not necessary because we close the connection to the tunnel when the burner is not burning.
It is the hot air flowing out when the burner is not burning that makes the fan dirty or leaves smooth on the torches.
The maintenance staff always tells us that they are extremely satisfied with our burners, no alarms, no breakdowns, no maintenance.

REFERENCES

Ardagh Germany : In every factory, in every Pennekamp annealing line, our burners G5 and G7 replace the original burners in the first 2 sections, average gain 25 %.
Verallia Spain : In every factory, in every Pennekamp annealing line, our burners G5 and G7 replace the original burners in the first 2 sections, average gain 25 %.
Many other references, mainly in Europe but also in the rest of the world.
Antonini annealing lehrs : We developed burner G6, based on the G5, adapted to replace existing Antonini burners with comparable results,