

DIVISIONE: **TESTING-CERTIFICAZIONE**
 DIVISION: **TESTING & CERTIFICATION**

 LABORATORIO: **Fisica della Combustione**
 LABORATORY: **Physics of Combustion**
RAPPORTO DI PROVA
(Test Report)

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 N° **1113\DC\REA\18_1**

 Data: **07/11/2018**
 Date:

 IDENTIFICAZIONE E DESCRIZIONE DEL CAMPIONE:
 SPECIMEN DESCRIPTION:

 Nome commerciale.....: **LINAHAUS**
 Product Name

 Descrizione.....: **Vedi pagina 2**
 Description.....: **See page 2**

 DATI IDENTIFICATIVI DEL CLIENTE:
 CLIENT:

 Nome / Name.....: **IDM SÜDTIROL - ALTO ADIGE**
 Indirizzo / Address.....: **Piazza della Parrocchia, 11**
 Città / City.....: **39100 Bolzano**

 NORMA DI RIFERIMENTO:
 REFERENCE STANDARD:

Norma Tecnica / Technical standard:

EN 13823:2010+A1:2014 - Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item

 DISTRIBUZIONE ESTERNA:
 OUTSIDE DISTRIBUTION:

Originale cliente
Original : Client

 DISTRIBUZIONE INTERNA:
 INSIDE DISTRIBUTION:

Copia capo laboratorio
Copy: Head of laboratory

 ENTE DI ACCREDITAMENTO:
 ACCREDITATION BODY:

 LAB N°0006
 Signatory of EA, IAF and ILAC
 Mutual Recognition Agreements

DATI GENERALI / GENERAL DATA:

- Data ricevimento campioni.....: **17/10/2018**
Product supply date
- Data esecuzione prove / *Date of test*.....: **06/11/2018**
- Identificazione delle norme di riferimento.....: **EN 13823:2010+A1:2014**
Standard reference identification **EN 13238:2010**
- Identificazione dei metodi di prova.....: //
Test method identification
- Campionamento / *Sampling*.....: **Provette di materiale fornite dal cliente.**
Specimens supplied by the client.
- Condizionamento secondo EN 13238.....: **23 °C - 50 % u.r. fino a massa costante**
Conditioning complying EN 13238 **23 °C - 50 % r.h. until constant mass**
- Procedura normalizzata / *Standard procedure*.....: **SI / YES**
- Deviazione dai metodi di prova.....: **NO / NO**
Standard procedure deviation
- Controllo calcoli / *Calculation check*.....: **SI / YES**

CAMPIONI ANALIZZATI / SAMPLES TESTED:

- 3 provette campione denominate / *3 specimens of sample identified:*

LINAHAUS

Descrizione: **Elemento per parete in legno massiccio di conifera con camere d'aria fissate con spinotti in legno di faggio.**

Description: **Solid coniferous wood element for walls with air gaps fixed with beech wood tongues.**

Massa areica: **89,3 kg/m²**

Mass per area unit.....: **89,3 kg/m²**

Spessore.....: **190 mm**

Thickness: **190 mm**

Tipo di substrato / *Substrate type:*
 Nessuno / *None*

Allestimento del campione / *Specimen mounting and fixing:*
 Costruzione del provino come da EN 13823 par 5.2 b) con pannelli del retro a 80 mm dal provino.
Specimen mounting complying to EN 13823 par 5.2 b) with backing board at 80 mm from the specimen.

DICHIARAZIONE / STATEMENTS:

- I risultati di prova contenuti nel presente rapporto si riferiscono esclusivamente al campione provato.
Test results contained in this test report relate only to specimens tested.
- Il presente rapporto non può essere riprodotto parzialmente senza l'autorizzazione del Responsabile del Centro.
The test report shall not be reproduced except in full without the written approval of the Managing Director.
- I dati tecnici riportati nella descrizione del campione sono desunti dalla scheda tecnica allegata dal cliente al campione di prova.
The technical data reported on the specimen description are taken from client technical sheet.
- I risultati di prova si riferiscono esclusivamente al comportamento dei provini di un materiale nelle particolari condizioni della prova; essi non sono destinati ad essere l'unico criterio per la valutazione della pericolosità potenziale del materiale in opera.
The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

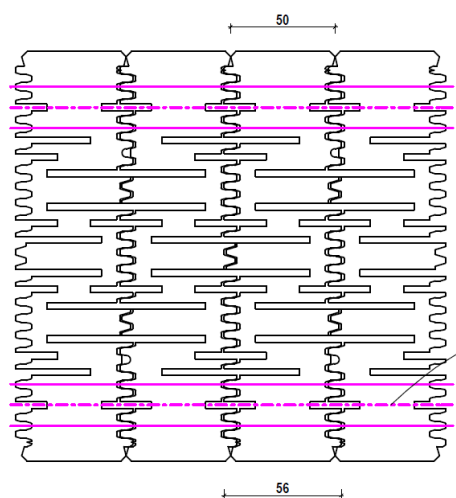
FOTOGRAFIE / PHOTOGRAPHS:



Vista frontale ala lunga
Long wing front view



Angolo verticale esterno dell'ala lunga
Long wing vertical outer edge



Sezione / Section

RISULTATI / RESULTS:

- Metodo di prova / *Test method*

EN 13823:2010+A1:2014

Identificazione provetta <i>Specimen identification</i>	FIGRA 0.2MJ/0.4MJ [W/s]	THR [MJ]	LFS [Si/Yes – No/No]	SMOGRA [m ² /s ²]	TSP [m ²]	FDP [No/No - <10s - >10s]
1	457,5 a/at 381 s 457,5 a/at 381 s	18,1	No/No	1,8	42,4	No/No
2	466,8 a/at 387 s 466,8 a/at 387 s	18,2	No/No	3,2	52,5	No/No
3	457,9 a/at 378 s 457,9 a/at 378 s	19,3	No/No	2,9	52,6	No/No
Media Average	460,7 460,7	18,5	No/No	2,6	49,2	No/No

FIGRA = fire growth rate index

THR = total heat release

LFS = lateral flame spread

SMOGRA = smoke growth rate index

TSP = total smoke production

FDP = flaming droplets or particles

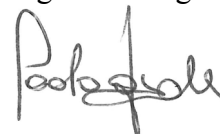
DATA
Date
Settore Fisica della Combustione
Physics of Combustion Sector
B. U. Prodotto
B. U. Product

07/11/2018

Dr. Lorenzo Zavaglio



Ing. P. Fumagalli

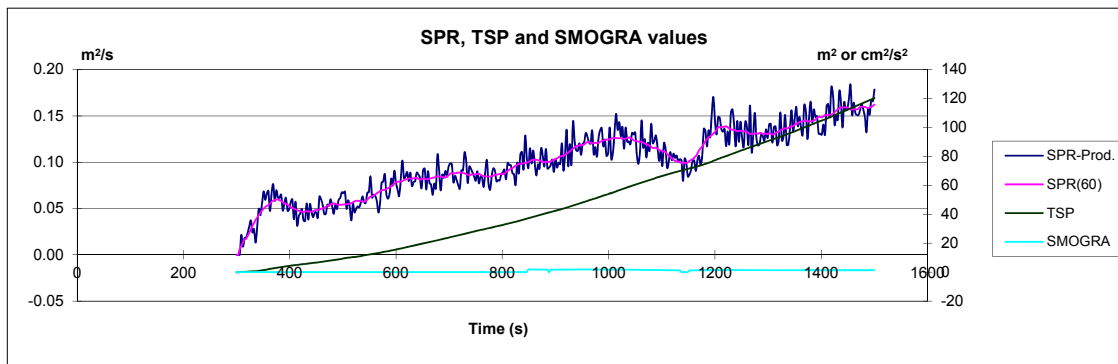
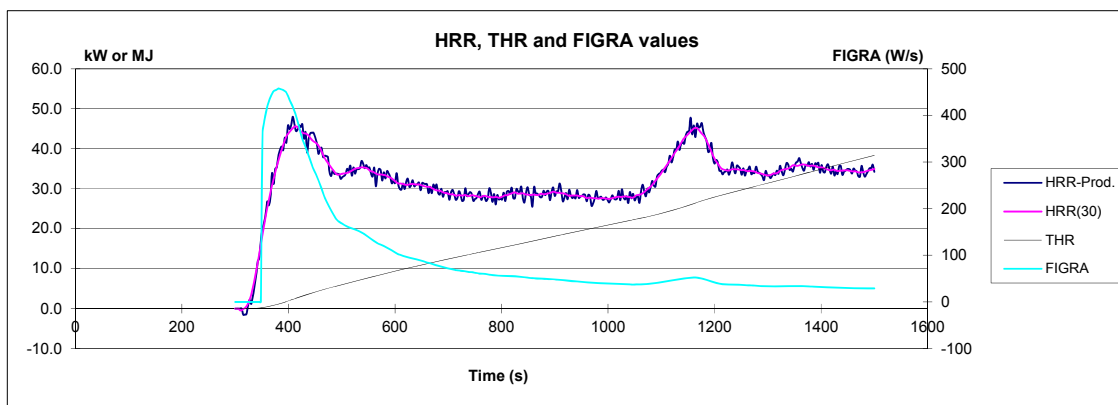
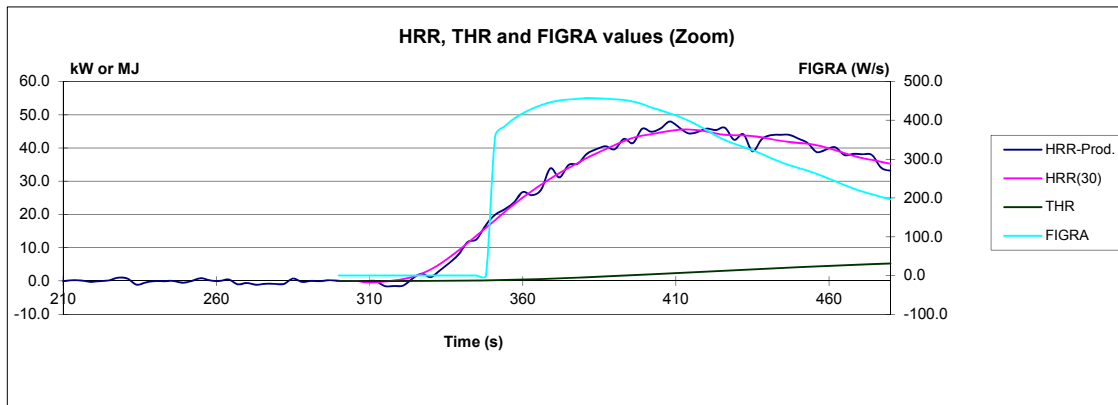


 Documento firmato digitalmente ai sensi del D. Lgs. N. 82 del 7 Marzo 2005 e successive modifiche
Digitally signed document in accordance with Legislative Decree n. 82 dated March 7th 2005 and subsequent amendments.

SBI Test Report

 Laboratory: CSI SpA
 Product: LINHAUS

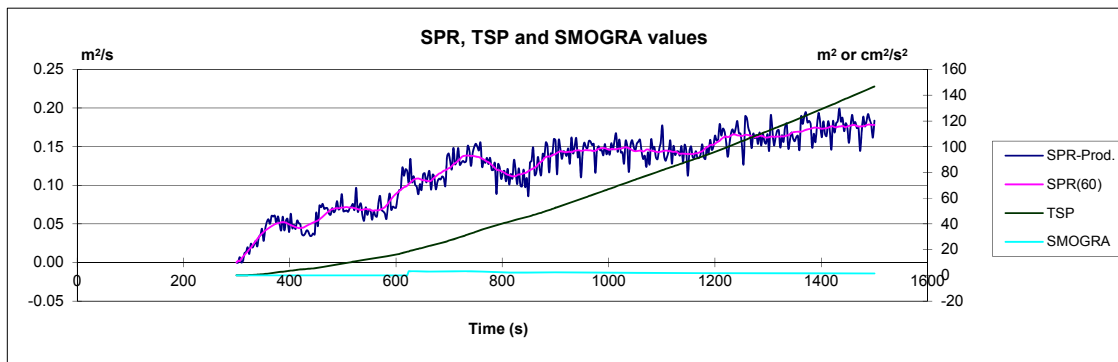
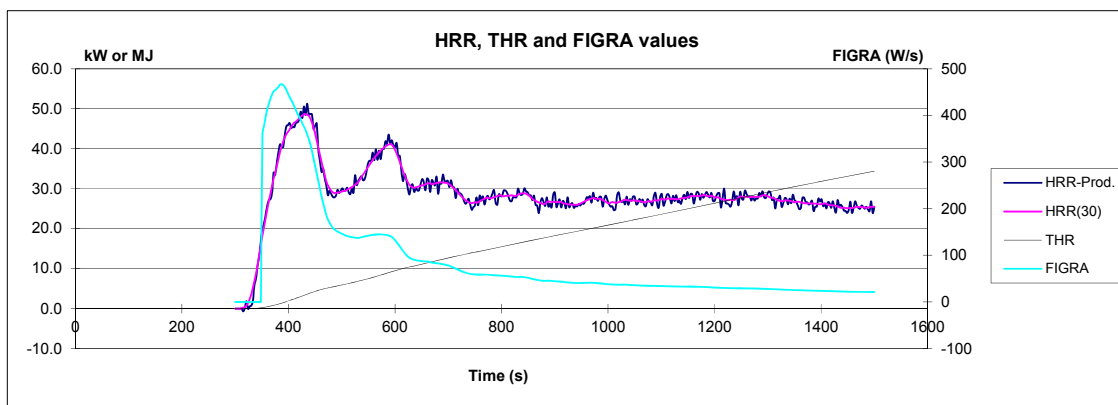
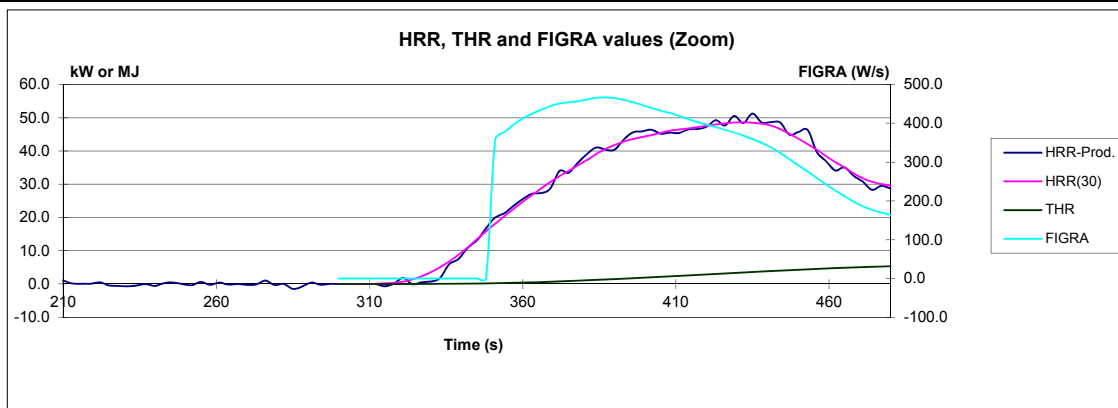
				Test no.	Test date:	Print date:
				1	05/11/2018	06/11/2018
Test condition		Check points		Results		
Baseline duct temp. (t=30-90) [K]	298.96	HRR _{av, burner} [KW]	30.036	FIGRA threshold: 0.2 MJ [W/s]		457.5
Ambient pressure. [Pa]	100959	HRR _{std burner} [KW]	0.532	FIGRA threshold: 0.4 MJ [W/s]		457.5
Humidity [%]	50	CO ₂ /O ₂ Ratio _{burner}	0.643	THR ₆₀₀ [MJ] *		18.1
		SPR _{av, burner} [m ² /s]	0.040	Lateral flame spread (LFS) reach the edge?		No
k _t	0.8600	SPR _{std burner} [m ² /s]	0.009	SMOGRA [m ² /s ²]		1.8
k _p	1.0800			TSP ₆₀₀ [m ²] *		42.4
E' [KJ/m ²]	17200	Ambient temp. (t=30-90) [K]	297.58	Flaming droplets/particles (FDP) (flaming <= 10 s)?		No
Duct diameter: [m]	0.315	No. of acceptable thermocouples	3	Flaming droplets/particles (FDP) (flaming > 10 s)?		No
		Minimum for flow [m ³ /s]	0.5115	Time to FIGRA _{0.2} [s] *		81
		Maximum for flow [m ³ /s]	0.6447	Time to FIGRA _{0.4} [s] *		81
		Burner response time [s]	12	Tig (2*6KW) [s] *		39
				* After ignition of main burner		
Baseline O ₂ (t=30-90) [%]	20.6067			Synchronisation information		
Baseline O ₂ (t=30-90) [%]	20.9536	End data O ₂ [%]	20.9517	T-Duct (2.5 K drop from baseline)	Baseline	Last point
Baseline CO ₂ (t=30-90) [%]	0.1950	End data CO ₂ [%]	0.1937	O ₂ (0.05% rise from baseline)	321.24	303
Baseline light signal (t=30-90)	100.0149	End data light signal	100.1194	CO ₂ (0.02% drop from baseline)	20.6665	303
					0.3796	303



SBI Test Report

 Laboratory: CSI SpA
 Product: LINHAUS

		Test no.	Test date:	Print date:
		2	05/11/2018	06/11/2018
Test condition	Check points		Results	
Baseline duct temp. (t=30-90) [K]	299.48	HRR _{av, burner} [KW]	31.301	FIGRA threshold: 0.2 MJ [W/s] 466.8
Ambient pressure. [Pa]	101033	HRR _{std burner} [KW]	0.456	FIGRA threshold: 0.4 MJ [W/s] 466.8
Humidity [%]	55	CO ₂ /O ₂ Ratio _{burner}	0.617	THR ₆₀₀ [MJ] * 18.2
		SPR _{av, burner} [m ² /s]	0.038	Lateral flame spread (LFS) reach the edge? No
k _t	0.8600	SPR _{std burner} [m ² /s]	0.009	SMOGRA [m ² /s ²] 3.2
k _p	1.0800			TSP ₆₀₀ [m ²] * 52.5
E' [KJ/m ²]	17200	Ambient temp. (t=30-90) [K]	294.65	Flaming droplets/particles (FDP) (flaming <= 10 s)? No
Duct diameter: [m]	0.315	No. of acceptable thermocouples	3	Flaming droplets/particles (FDP) (flaming > 10 s)? No
		Minimum for flow [m ³ /s]	0.5221	Time to FIGRA _{0.2} [s] * 87
		Maximum for flow [m ³ /s]	0.6093	Time to FIGRA _{0.4} [s] * 87
		Burner response time [s]	6	Tig (2*6KW) [s] * 39
				* After ignition of main burner
Baseline O ₂ (t=30-90) [%]	20.5577			
Baseline O ₂ (t=30-90) [%]	20.9509	End data O ₂ [%]	20.9353	Synchronisation information
Baseline CO ₂ (t=30-90) [%]	0.1943	End data CO ₂ [%]	0.1944	Baseline Last point
Baseline light signal (t=30-90)	100.0169	End data light signal	99.7953	T-Duct (2.5 K drop from baseline) 323.75 303
				O ₂ (0.05% rise from baseline) 20.6513 303
				CO ₂ (0.02% drop from baseline) 0.3791 303



SBI Test Report

 Laboratory: CSI SpA
 Product: LINHAUS

		Test no.	Test date:	Print date:
		3	05/11/2018	06/11/2018
Test condition	Check points		Results	
Baseline duct temp. (t=30-90) [K]	300.26	HRR _{av, burner} [KW]	30.862	FIGRA threshold: 0.2 MJ [W/s] 457.9
Ambient pressure. [Pa]	101085	HRR _{std burner} [KW]	0.514	FIGRA threshold: 0.4 MJ [W/s] 457.9
Humidity [%]	50	CO ₂ /O ₂ Ratio _{burner}	0.621	THR ₆₀₀ [MJ] * 19.3
		SPR _{av, burner} [m ² /s]	0.033	Lateral flame spread (LFS) reach the edge? No
k _t	0.8600	SPR _{std burner} [m ² /s]	0.009	SMOGRA [m ² /s ²] 2.9
k _p	1.0800			TSP ₆₀₀ [m ²] * 52.6
E' [KJ/m ²]	17200	Ambient temp. (t=30-90) [K]	295.65	Flaming droplets/particles (FDP) (flaming <= 10 s)? No
Duct diameter: [m]	0.315	No. of acceptable thermocouples	3	Flaming droplets/particles (FDP) (flaming > 10 s)? No
		Minimum for flow [m ³ /s]	0.5160	Time to FIGRA _{0.2} [s] * 78
		Maximum for flow [m ³ /s]	0.6083	Time to FIGRA _{0.4} [s] * 78
		Burner response time [s]	9	Tig (2*6KW) [s] * 42
Baseline O ₂ ° (t=30-90) [%]	20.5783			* After ignition of main burner
Baseline O ₂ (t=30-90) [%]	20.9526	End data O ₂ [%]	20.9436	Synchronisation information
Baseline CO ₂ (t=30-90) [%]	0.1939	End data CO ₂ [%]	0.1951	T-Duct (2.5 K drop from baseline)
Baseline light signal (t=30-90)	100.0010	End data light signal	100.0843	O ₂ (0.05% rise from baseline)
				CO ₂ (0.02% drop from baseline)

