Strawbuild

Straw wall Fire Test
Strawbuild
BSEN 1365-1: 2012

Report: Chilt/RF13217 Revision A

A fire resistance test
performed on a loadbearing compressed straw wall system

Test conducted in accordance with
BSEN 1365-1: 2012
and BSEN 1363-1: 1999

Test date: 25th October 2013

Client: Carina & Alex Mountcharles

Rock Farm Eco Development
Slane
Ireland

TEST WALL : 3m wide by just over 2.6m high,
loaded throughout to 84kN
to simulate the loading of a two storey timber framed house

7 courses of bales - compressed by about 15mm per course of bales.

4 posts of 95mm x 95mm at 1000mm centres within the wall, set 175mm back from the exposed face.

Vulnerabilities of the Test Wall

1

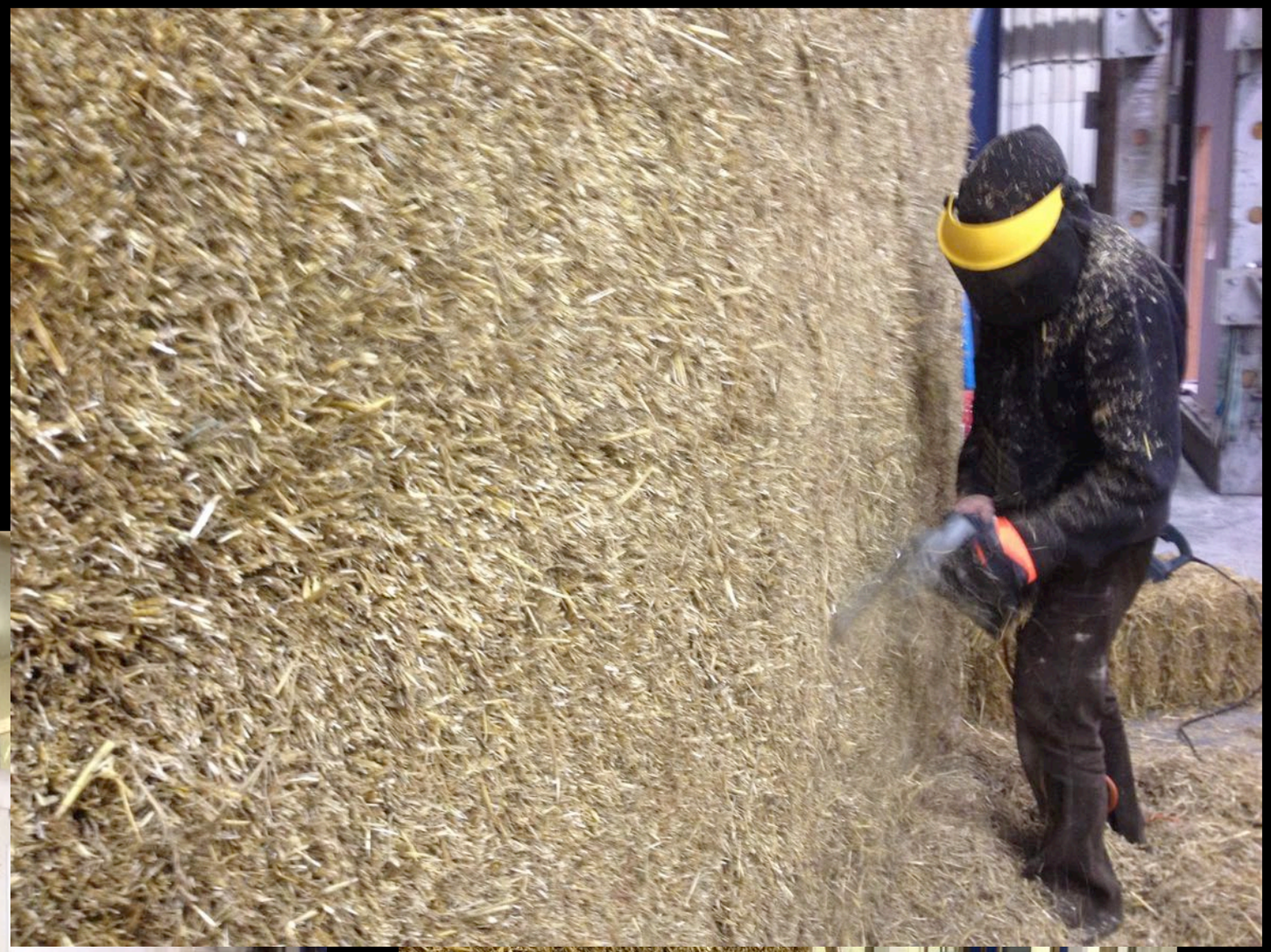
The loading jig was only 260mm wide, so to centre the four posts within the jig, 40mm from the front (exposed) face of the strawbale wall had to be cut back, so lessening the protection to the posts on the furnace side.

A steel spreader bar transferred and distributed the load equally to the posts

The posts therefore had to be central to the jig


Vishay Nobel
28.0
COMP
FT 3.57
RANGE
HOLD


BMTR



Placing of heat sensors on the posts, the faces of which were set back from the exposed face by 175mm

Vulnerabilities of the Test Wall

2

Dry ‘stuffing’ of the joints - not ‘cob’ stuffing

Vulnerabilities of the Test Wall

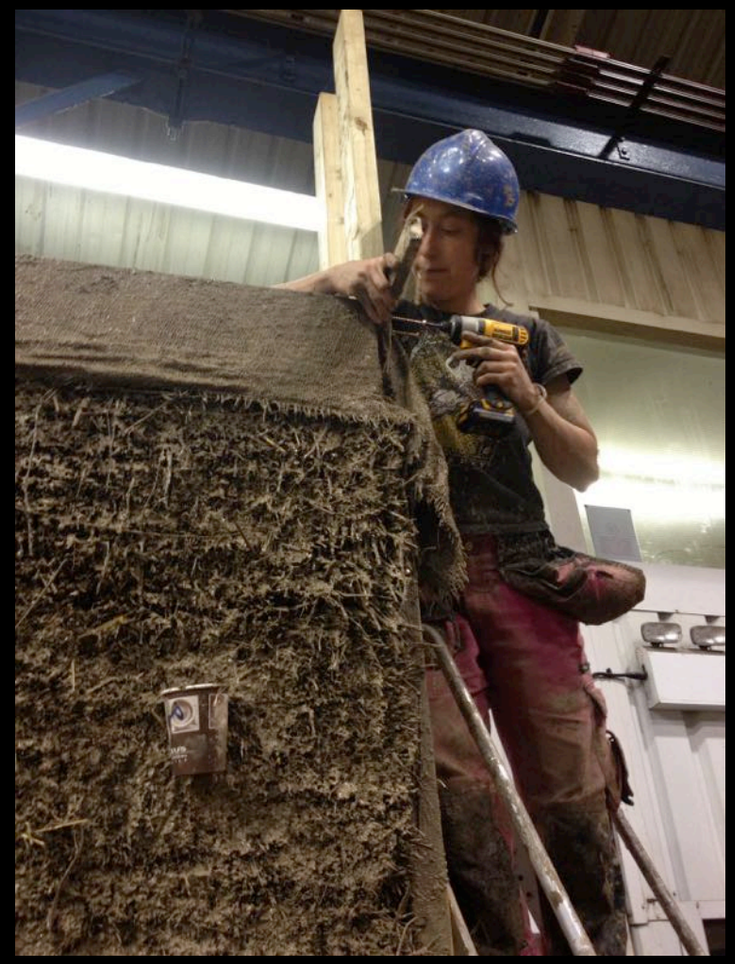
3

Average of 20 to 25mm thick clay plaster
- thinner than would be usual


EROS
HIRE TOOLS
BedSoft
Original


ERO


KING OF HALLOWEEN



Vulnerabilities of the Test Wall

4

Less short chopped straw than would be usual

Mix of 1 clay : 3 sand : 1 straw

Testing proportions of straw in trial plaster mixes

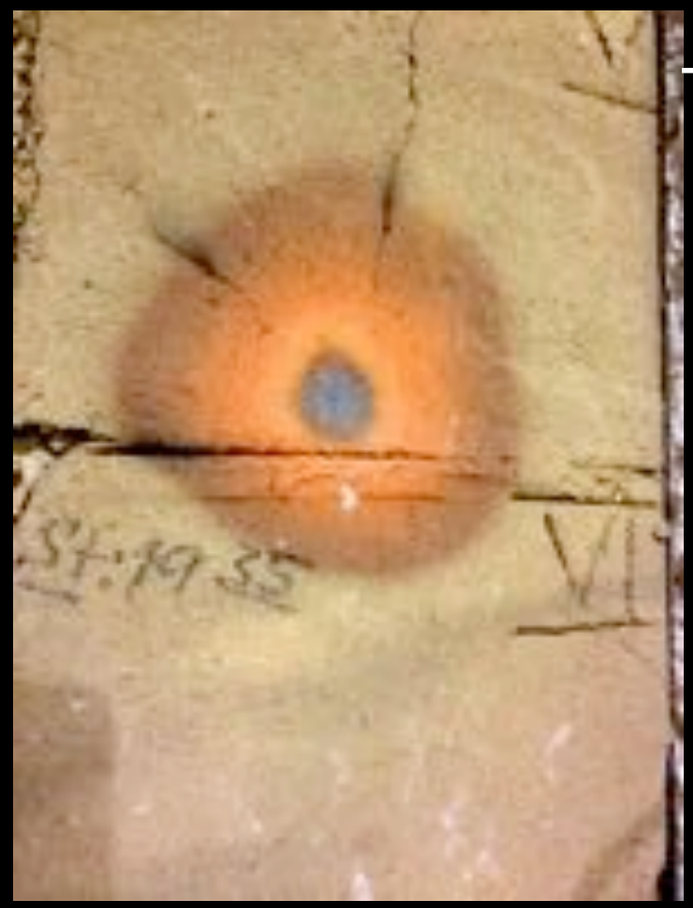

Björklinder


aus Lehm


NON RICARICARE
ΔΕΝ ΝΑΓΟΜΩΝΕΤΑΙ
www.rothenberger.com

High straw content
in the trial plaster mixes
did not crack after
one hour

1 : 3 : 3
1 : 3 : 2
1 : 3 : 1



Trial mixes with clay and
sand only, cracked
after 10 minutes

1 : 3
1 : 4

Vulnerabilities of the Test Wall

5

The unexposed face of the wall was left unplastered - as naked straw.

And none of the joints in the unexposed face were stuffed


BMTRADA
00:30:17
RF13217

Simple, Local, Natural and Affordable Materials

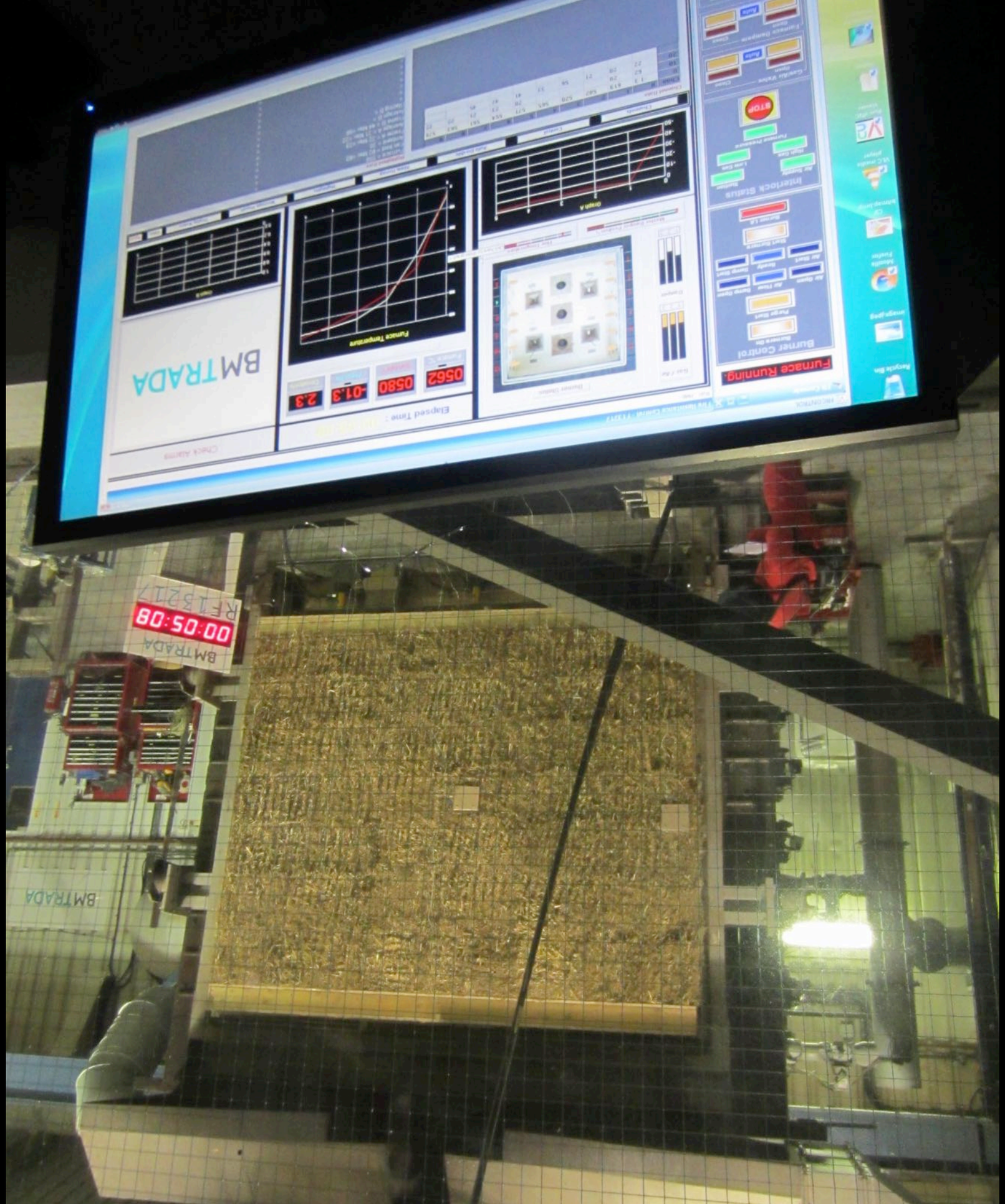
Easily Available almost anywhere

No ‘bought products’

2 string strawbales (c. 120kg/m3)
Locally dug clay rich soil
Local sharp sand
Short chopped straw

So anyone, anywhere can use this Fire Test Result
using their own local materials

With a special THANK YOU to Mark Womersley
of Lime and Clay Suppliers, Womersleys,
Heckmondwyke, West Yorkshire


Furnace Running
Burner Control
Interlock Status
STOP
Furnace Temperature
0562
0580
-01.3
2.3
Elapsed Time :
BMTRADA
00:50:08


BMTRADA
00: 16:00
RF13217


BMTRADA
00:48: 13


BMTRADA
BMTRADA
01:01:26
RF13217


BMTRADA
02:00:04
RF13217


BMTRADA
02:00:15
RF13217


BMTRADA
02:13:33
RF13217

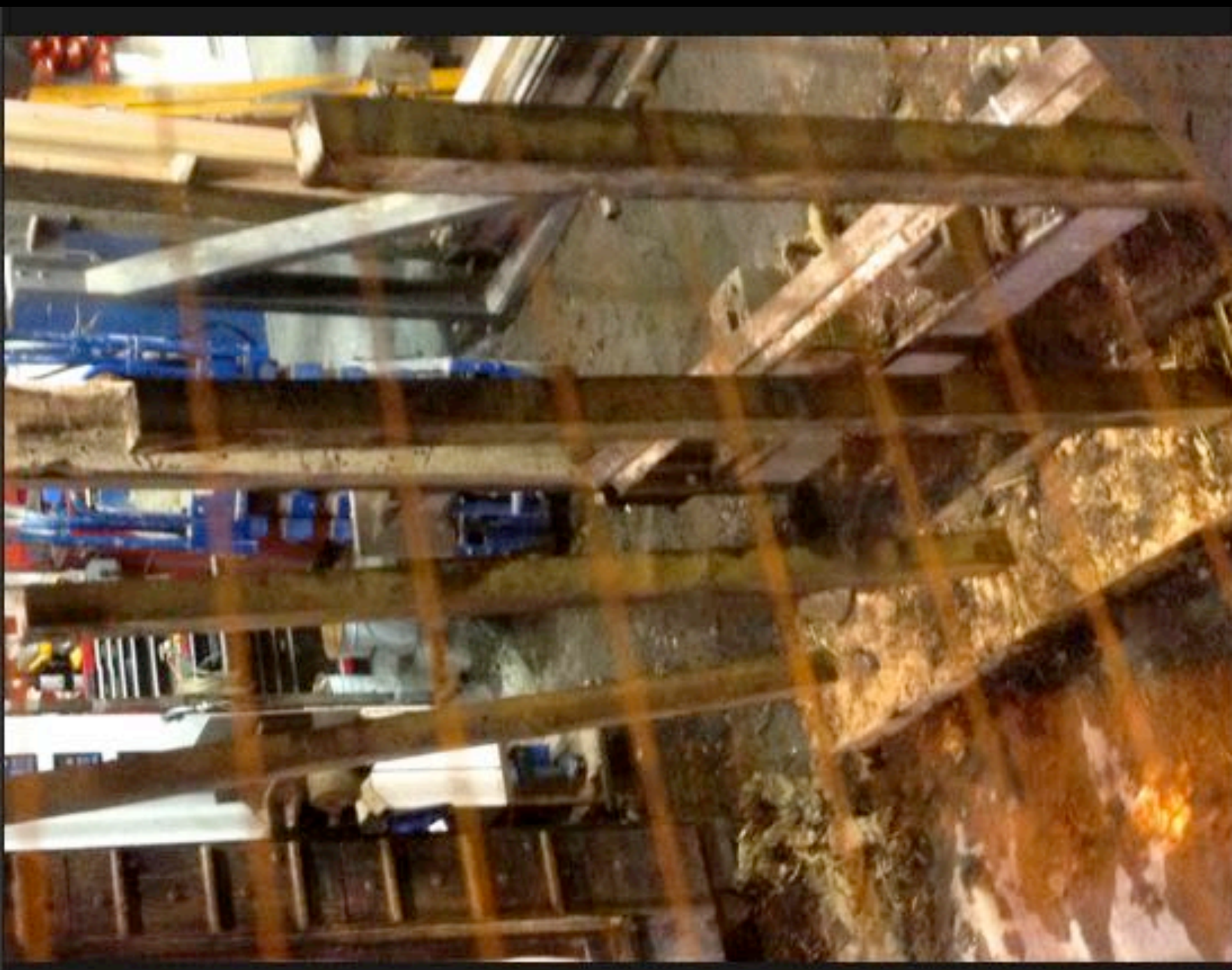

BMTRADA
02:15:13
RF13217


20
-00


01

Trada Fire Test 25 Oct 2013

00:02:10 -00:00:21




Eureka!

FR Console

Furnace Running

Burner Control

Burners On

Purge Start

Air Open | Air Flow | Damp Open

Air Start | Ready | Damp Start

Start Burners

Burner Lit

Interlock Status

Air Supply | Suction

High Gas | Low Gas

Furnace Pressure

STOP

Gas/Air Valve

Open | Close | Auto

Furnace Dampers

Open | Close | Auto

Master Damper

Open | Close | Auto

© Dark Star Research

Fire Resistance Control - F13217

Run Help

Gas / Air

1 2 3

Damper

1 2 3

Burner Status

Zone 2

Zone 1

Master Damper Positon %

Flue Temperature

Graph A

10 0 -10 -20 -30 -40 -50

50 100 150

Elapsed Time : 02:11:31

1070	1062	-01.6	0.7
Furnace °C	Standard °C	Press Pa	Deviation %

Network disabled

Furnace Temperature

1500 1000 500 0

0 50 100 150

Check Alarms

Graph B

150 100 50 0

0 50 100 150

Channels | Control | Auto Disable | Alarm History | Highlights | Message Report | Display Names | Video | Reset

Channel Data

Chan	0	1	2	3	4	5	6	7	8	9
0	-1.6	1105	1108	1041	1071	1075	1079	1061	1065	1058
10	196	20				64	53	66	69	81
20	72	72	63	90	88	94	139	93		

Highlighted Data

Furnace = 1074

Fan Inlet = 196 Max =196

Ambient = 20

Frame A = 61 Max =66

Average A = 71 Max =81

Frame B = 101 Max =139

Average B =

Glazing B =

Strawbuild Crew:

Duncan Macbeth
Edouard Hubo
Chris Hawker
Piet Karlsturd
Jo Forsyth
Bee Rowan

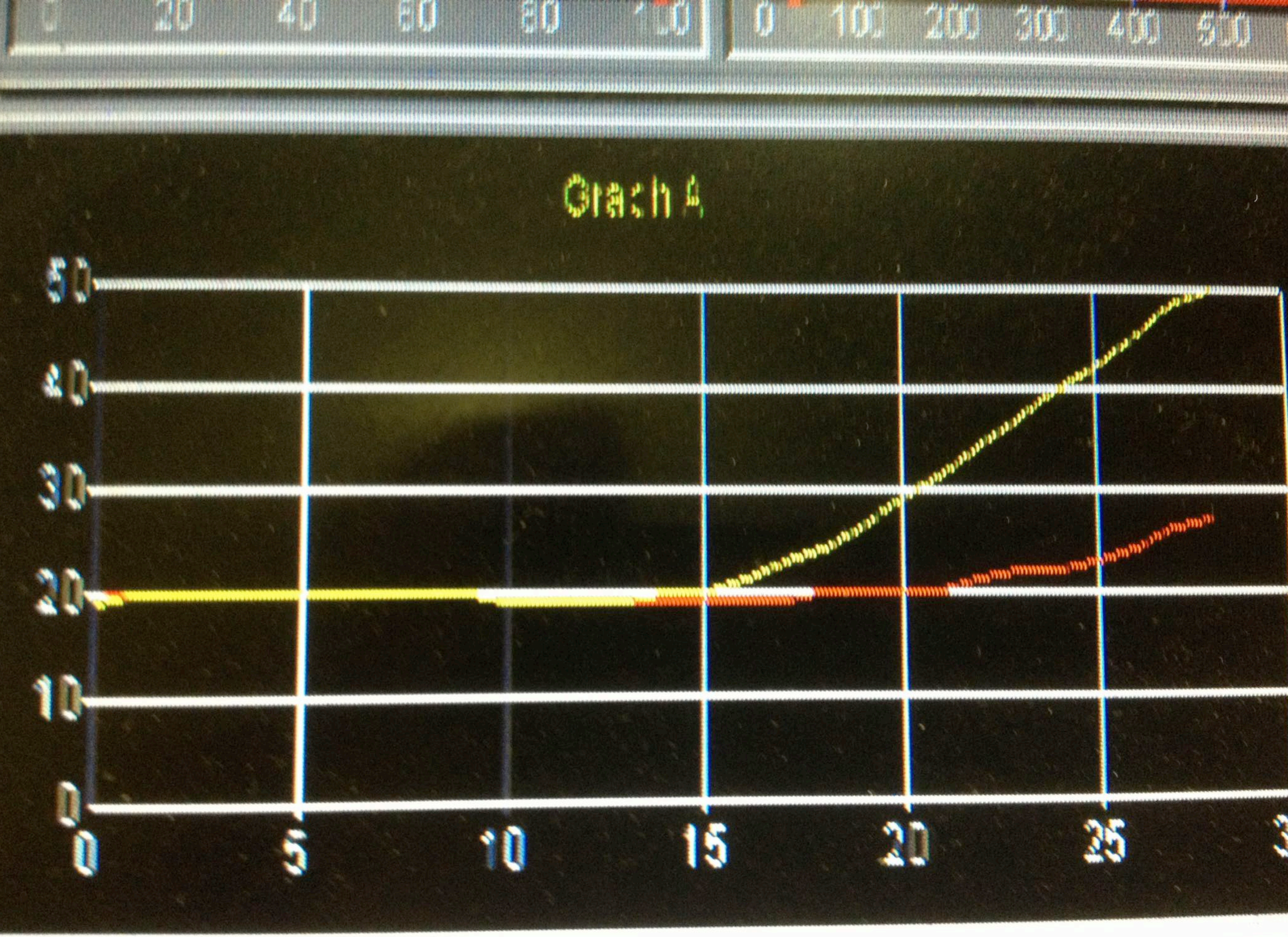
Spread of Flame Test ?


BMTRADA
00:30:02
RF13250


BMTRADA
00:30:22
RF13250


BMTRADA
01:05:19
RF13250


01:01:07
RF13250


Graph A
50
40
30
20
10
0
0
5
10
15
20
25

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