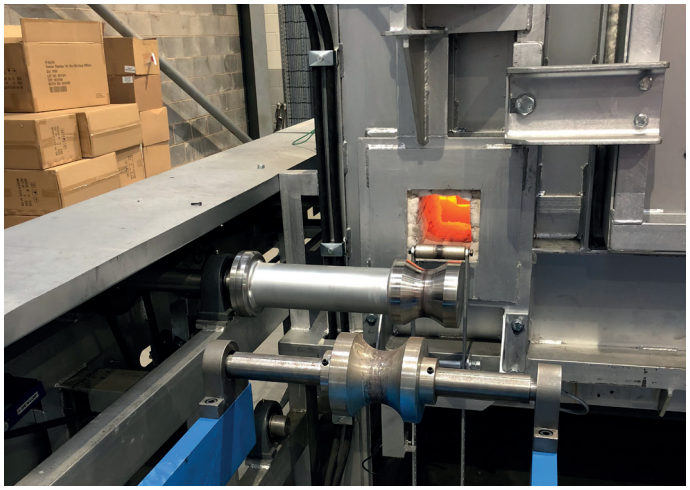
Rapid Heater Walking Beam Furnace

BESPOKE FURNACE MANUFACTURERS

MADE IN BRITAIN

HANSON SPRINGS LTD

Hanson Springs



Walking Beam Furnace for Coil Spring Manufacturing

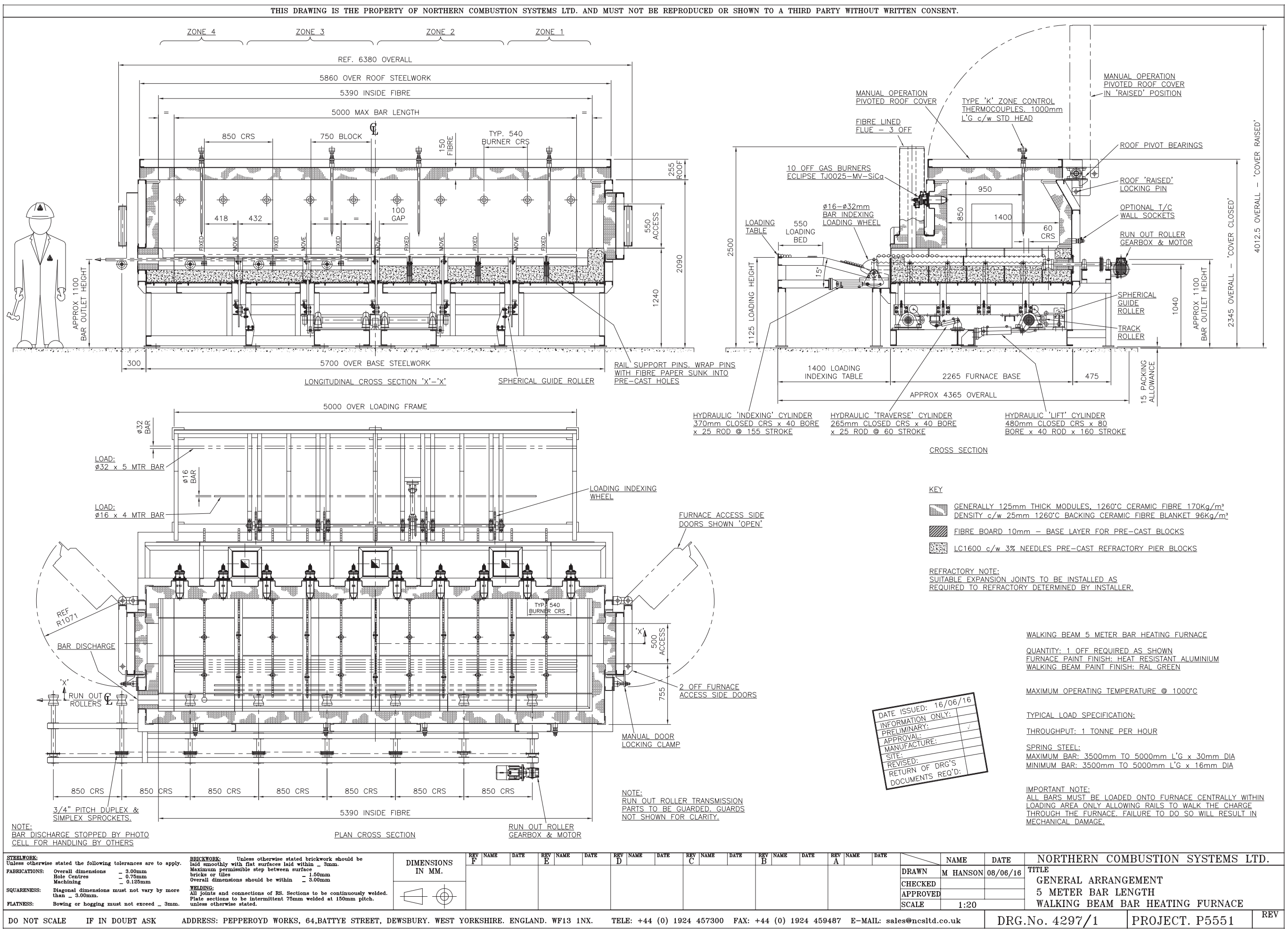
Full turnkey, design, manufacture and installation of two furnaces to walk spring steel through to pre-heat bars up to 1000°C delivering the bars on demand to a robotic arm, accurately positioning the bars in the coiling machine in the manufacture of coiled springs.

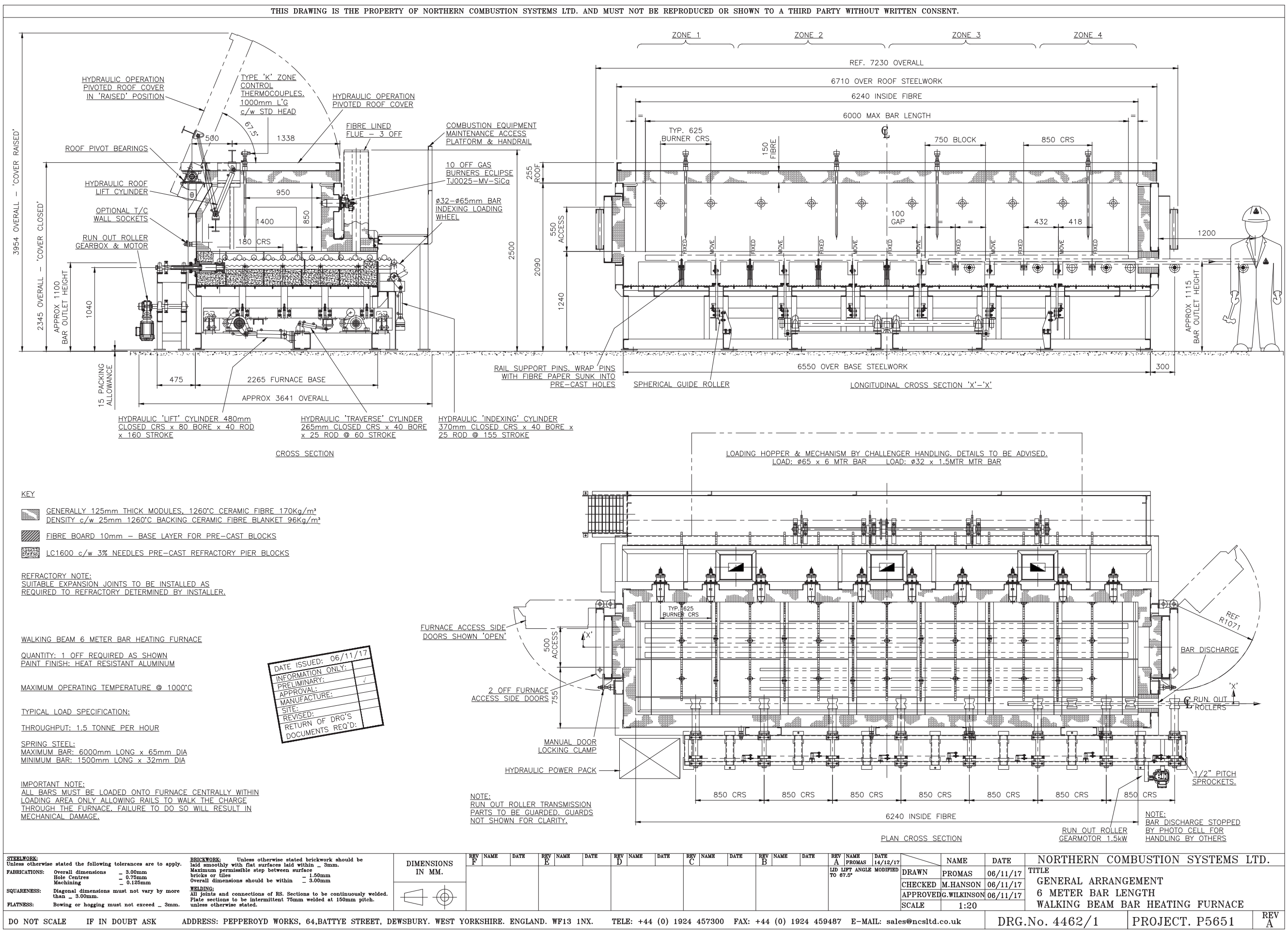
Furnace 1 capacity - Bars in length up to 5 meters ranging from Ø16mm – Ø35mm. Throughput of 1.5 tonnes per hour.

Furnace 2 capacity - Bars in length up to 6 meters ranging from Ø33mm – Ø65mm. Throughput of 1.5 tonnes per hour.

Stockpiled bars at the inlet are automatically collected by the indexing loading mechanism from the loading table. Bars are then in turn collected by the hydraulic operated walking beams to be walked through for heating by Furnace 1: Eight 90kW; Furnace 2: Ten 90kW, medium velocity natural gas burners in 4 control zones down the length of the furnace. The system designed to meet with current European safety standards EN746-2 2010.

The furnace incorporates dense refractory hearth, ceramic fibre lined side walls and roof, hinged side access doors and a pivoted hydraulic operated roof for maintenance access to the furnace chamber. The furnace is operated via interactive screens on the HMI with the PLC used to sequence the operation of loading machine, walking beams and the discharge diablo roller table.


THIS DRAWING IS THE PROPERTY OF NORTHERN COMBUSTION SYSTEMS LTD. AND MUST NOT BE REPRODUCED OR SHOWN TO A THIRD PARTY WITHOUT WRITTEN CONSENT.
ZONE 4
ZONE 3
ZONE 2
ZONE 1
REF. 6380 OVERALL
5860 OVER ROOF STEELWORK
5390 INSIDE FIBRE
5000 MAX BAR LENGTH
850 CRS
750 BLOCK
TYP. 540 BURNER CRS
150 FIBRE
255 ROOF
418
432
100 GAP
550 ACCESS
2090
1240
APPROX 1100 BAR OUTLET HEIGHT
300
5700 OVER BASE STEELWORK
LONGITUDINAL CROSS SECTION 'X'-'X'
SPHERICAL GUIDE ROLLER
RAIL SUPPORT PINS, WRAP PINS WITH FIBRE PAPER SUNK INTO PRE-CAST HOLES
MANUAL OPERATION PIVOTED ROOF COVER
TYPE 'K' ZONE CONTROL THERMOCOUPLES, 1000mm L'G c/w STD HEAD
MANUAL OPERATION PIVOTED ROOF COVER IN 'RAISED' POSITION
FIBRE LINED FLUE – 3 OFF
ROOF PIVOT BEARINGS
10 OFF GAS BURNERS ECLIPSE TJ0025-MV-SiCo
950
ROOF 'RAISED' LOCKING PIN
ø16–ø32mm BAR INDEXING LOADING WHEEL
OPTIONAL T/C WALL SOCKETS
LOADING TABLE
550 LOADING BED
1400
60 CRS
RUN OUT ROLLER GEARBOX & MOTOR
2500
15°
SPHERICAL GUIDE ROLLER
TRACK ROLLER
1040
APPROX 1100 BAR OUTLET HEIGHT
2345 OVERALL – 'COVER CLOSED'
4012.5 OVERALL – 'COVER RAISED'
1125 LOADING HEIGHT
1400 LOADING INDEXING TABLE
2265 FURNACE BASE
475
APPROX 4365 OVERALL
15 PACKING ALLOWANCE
HYDRAULIC 'INDEXING' CYLINDER 370mm CLOSED CRS x 40 BORE x 25 ROD @ 155 STROKE
HYDRAULIC 'TRAVERSE' CYLINDER 265mm CLOSED CRS x 40 BORE x 25 ROD @ 60 STROKE
HYDRAULIC 'LIFT' CYLINDER 480mm CLOSED CRS x 80 BORE x 40 ROD x 160 STROKE
CROSS SECTION
5000 OVER LOADING FRAME
ø32 BAR
LOAD: ø32 x 5 MTR BAR
ø16 BAR
LOAD: ø16 x 4 MTR BAR
LOADING INDEXING WHEEL
FURNACE ACCESS SIDE DOORS SHOWN 'OPEN'
REF R1071
TYP. 540 BURNER CRS
BAR DISCHARGE
500 ACCESS
RUN OUT ROLLERS
755
2 OFF FURNACE ACCESS SIDE DOORS
MANUAL DOOR LOCKING CLAMP
850 CRS
3/4" PITCH DUPLEX & SIMPLEX SPROCKETS
5390 INSIDE FIBRE
NOTE: BAR DISCHARGE STOPPED BY PHOTO CELL FOR HANDLING BY OTHERS
PLAN CROSS SECTION
RUN OUT ROLLER GEARBOX & MOTOR
NOTE: RUN OUT ROLLER TRANSMISSION PARTS TO BE GUARDED. GUARDS NOT SHOWN FOR CLARITY.
KEY
GENERALLY 125mm THICK MODULES, 1260°C CERAMIC FIBRE 170Kg/m³ DENSITY c/w 25mm 1260°C BACKING CERAMIC FIBRE BLANKET 96Kg/m³
FIBRE BOARD 10mm – BASE LAYER FOR PRE-CAST BLOCKS
LC1600 c/w 3% NEEDLES PRE-CAST REFRACTORY PIER BLOCKS
REFRACTORY NOTE: SUITABLE EXPANSION JOINTS TO BE INSTALLED AS REQUIRED TO REFRACTORY DETERMINED BY INSTALLER.
WALKING BEAM 5 METER BAR HEATING FURNACE
QUANTITY: 1 OFF REQUIRED AS SHOWN
FURNACE PAINT FINISH: HEAT RESISTANT ALUMINIUM
WALKING BEAM PAINT FINISH: RAL GREEN
MAXIMUM OPERATING TEMPERATURE @ 1000°C
TYPICAL LOAD SPECIFICATION:
THROUGHPUT: 1 TONNE PER HOUR
SPRING STEEL:
MAXIMUM BAR: 3500mm TO 5000mm L'G x 30mm DIA
MINIMUM BAR: 3500mm TO 5000mm L'G x 16mm DIA
IMPORTANT NOTE: ALL BARS MUST BE LOADED ONTO FURNACE CENTRALLY WITHIN LOADING AREA ONLY ALLOWING RAILS TO WALK THE CHARGE THROUGH THE FURNACE. FAILURE TO DO SO WILL RESULT IN MECHANICAL DAMAGE.
DATE ISSUED: 16/06/16
INFORMATION ONLY:
PRELIMINARY:
APPROVAL:
MANUFACTURE:
SITE:
REVISED:
RETURN OF DRG'S
DOCUMENTS REQ'D:
DIMENSIONS IN MM.
NAME
DATE
DRAWN
M HANSON
08/06/16
CHECKED
APPROVED
SCALE
1:20
NORTHERN COMBUSTION SYSTEMS LTD.
TITLE
GENERAL ARRANGEMENT
5 METER BAR LENGTH
WALKING BEAM BAR HEATING FURNACE
DO NOT SCALE
IF IN DOUBT ASK
ADDRESS: PEPPEROYD WORKS, 64,BATTYE STREET, DEWSBURY. WEST YORKSHIRE. ENGLAND. WF13 1NX.
TELE: +44 (0) 1924 457300
FAX: +44 (0) 1924 459487
E-MAIL: sales@ncsltd.co.uk
DRG.No. 4297/1
PROJECT. P5551
REV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HYDRAULIC OPERATION PIVOTED ROOF COVER IN 'RAISED' POSITION
TYPE 'K' ZONE CONTROL THERMOCOUPLES, 1000mm L'G c/w STD HEAD
HYDRAULIC OPERATION PIVOTED ROOF COVER
FIBRE LINED FLUE – 3 OFF
COMBUSTION EQUIPMENT MAINTENANCE ACCESS PLATFORM & HANDRAIL
ROOF PIVOT BEARINGS
10 OFF GAS BURNERS ECLIPSE TJ0025-MV-SiCo
HYDRAULIC ROOF LIFT CYLINDER
ø32–ø65mm BAR INDEXING LOADING WHEEL
OPTIONAL T/C WALL SOCKETS
RUN OUT ROLLER GEARBOX & MOTOR
3954 OVERALL – 'COVER RAISED'
2345 OVERALL – 'COVER CLOSED'
APPROX 1100 BAR OUTLET HEIGHT
1040
580
1338
950
1400
180 CRS
2500
2090
1240
475
2265 FURNACE BASE
APPROX 3641 OVERALL
15 PACKING ALLOWANCE
HYDRAULIC 'LIFT' CYLINDER 480mm CLOSED CRS x 80 BORE x 40 ROD x 160 STROKE
HYDRAULIC 'TRAVERSE' CYLINDER 265mm CLOSED CRS x 40 BORE x 25 ROD @ 60 STROKE
HYDRAULIC 'INDEXING' CYLINDER 370mm CLOSED CRS x 40 BORE x 25 ROD @ 155 STROKE
CROSS SECTION
ZONE 1
ZONE 2
ZONE 3
ZONE 4
REF. 7230 OVERALL
6710 OVER ROOF STEELWORK
6240 INSIDE FIBRE
6000 MAX BAR LENGTH
TYP. 625 BURNER CRS
150 FIBRE
255 ROOF
750 BLOCK
850 CRS
550 ACCESS
100 GAP
432
418
1200
APPROX 1115 BAR OUTLET HEIGHT
6550 OVER BASE STEELWORK
300
RAIL SUPPORT PINS, WRAP PINS WITH FIBRE PAPER SUNK INTO PRE-CAST HOLES
SPHERICAL GUIDE ROLLER
LONGITUDINAL CROSS SECTION 'X'-'X'
LOADING HOPPER & MECHANISM BY CHALLENGER HANDLING. DETAILS TO BE ADVISED.
LOAD: ø65 x 6 MTR BAR
LOAD: ø32 x 1.5MTR MTR BAR
KEY
GENERALLY 125mm THICK MODULES, 1260°C CERAMIC FIBRE 170Kg/m³ DENSITY c/w 25mm 1260°C BACKING CERAMIC FIBRE BLANKET 96Kg/m³
FIBRE BOARD 10mm – BASE LAYER FOR PRE-CAST BLOCKS
LC1600 c/w 3% NEEDLES PRE-CAST REFRACTORY PIER BLOCKS
REFRACTORY NOTE: SUITABLE EXPANSION JOINTS TO BE INSTALLED AS REQUIRED TO REFRACTORY DETERMINED BY INSTALLER.
WALKING BEAM 6 METER BAR HEATING FURNACE
QUANTITY: 1 OFF REQUIRED AS SHOWN
PAINT FINISH: HEAT RESISTANT ALUMINIUM
MAXIMUM OPERATING TEMPERATURE @ 1000°C
TYPICAL LOAD SPECIFICATION:
THROUGHPUT: 1.5 TONNE PER HOUR
SPRING STEEL:
MAXIMUM BAR: 6000mm LONG x 65mm DIA
MINIMUM BAR: 1500mm LONG x 32mm DIA
IMPORTANT NOTE: ALL BARS MUST BE LOADED ONTO FURNACE CENTRALLY WITHIN LOADING AREA ONLY ALLOWING RAILS TO WALK THE CHARGE THROUGH THE FURNACE. FAILURE TO DO SO WILL RESULT IN MECHANICAL DAMAGE.
DATE ISSUED: 06/11/17
INFORMATION ONLY:
PRELIMINARY:
APPROVAL:
MANUFACTURE:
SITE:
REVISED:
RETURN OF DRG'S
DOCUMENTS REQ'D:
FURNACE ACCESS SIDE DOORS SHOWN 'OPEN'
TYP. 625 BURNER CRS
500 ACCESS
REF R1071
BAR DISCHARGE
2 OFF FURNACE ACCESS SIDE DOORS
755
RUN OUT ROLLERS
MANUAL DOOR LOCKING CLAMP
HYDRAULIC POWER PACK
850 CRS
1/2" PITCH SPROCKETS.
NOTE: RUN OUT ROLLER TRANSMISSION PARTS TO BE GUARDED. GUARDS NOT SHOWN FOR CLARITY.
6240 INSIDE FIBRE
RUN OUT ROLLER GEARMOTOR 1.5kW
NOTE: BAR DISCHARGE STOPPED BY PHOTO CELL FOR HANDLING BY OTHERS
PLAN CROSS SECTION
DIMENSIONS IN MM.
A PROMAS 14/12/17
NAME
DATE
DRAWN
PROMAS
06/11/17
CHECKED
M.HANSON
06/11/17
APPROVED
G.WILKINSON
06/11/17
SCALE
1:20
NORTHERN COMBUSTION SYSTEMS LTD.
TITLE
GENERAL ARRANGEMENT
6 METER BAR LENGTH
WALKING BEAM BAR HEATING FURNACE
DO NOT SCALE
IF IN DOUBT ASK
ADDRESS: PEPPEROYD WORKS, 64,BATTYE STREET, DEWSBURY. WEST YORKSHIRE. ENGLAND. WF13 1NX.
TELE: +44 (0) 1924 457300
FAX: +44 (0) 1924 459487
E-MAIL: sales@ncsltd.co.uk
DRG.No. 4462/1
PROJECT. P5651
REV A