

SPECIFICATION SHEET

CUSTOMER	ITS		DATE	May 2, 2002	
REFERENCE NUMBER	99170 REV. 1		ITEM NUMBER	1 OF 2	
MODEL	HL 108 - 2 - 32		NUMBER REQUIRED	1	
PERFORMANCE OF ONE UNIT					
1 FLUID		RECYCLE GAS	TOP RECYCLE	PRODUCT CLR	
2 FLOW		5520 #/hr	58005 #/hr	3520 #/hr	
3		AC-445	AC-465	AC-510	
4		MW=33.52926			
5 TEMPERATURE IN, °F		203	327	364	
6 TEMPERATURE OUT, °F		130	150	130	
7 INLET PRESSURE, PSIA		21.63	80.63	49.63	
8 PRESSURE DROP, PSI		2.0	9.1	3.2	
9 DUTY, BTU/HOUR		446151	4965066	411840	
10 CORRECTED MTD		35.51	88.12	91.17	
11 BARE TUBE RATE		58.38	51.74	17.24	
12 FOULING		.002	.003	.003	
13 BARE TUBE SURFACE, SQ. FT.		276.46	1089.09	284.84	
14 TOTAL SURFACE, SQ. FT.		5916	23307	6096	
CONSTRUCTION					
15 NUMBER OF SECTIONS		1	1	1	
16 TUBES / SECTIONS		33	130	34	
17 LENGTH		32	32	32	
18 ROWS - PASSES		5-1	4-6	4-6	
19 TUBE O.D. AND BWG		1X16	1X14	1X14	
20 TUBE MATERIAL		SA249-TP316	SA179	SA179	
21 INSERTS		-	-	SPIRAL	
22 DESIGN PRESSURE, PSI		50	100	100	
23 DESIGN TEMPERATURE, °F		-20/250	-20/450	-20/450	
24 NOZZLES		8-150RF	3-150RF	2-150RF	
25 HEADERS		<input checked="" type="checkbox"/> BOX TYPE WITH REMOVABLE PLUGS, CARBON STEEL			
26 ASME STAMP	&NB	YES	YES	YES	
27 PLUGS, TYPE		SHOULDER	SHOULDER	SHOULDER	
28 PLUGS, MATERIAL		STEEL	STEEL	STEEL	
29 FINS		<input checked="" type="checkbox"/> ALUMINUM, ANGLE BASE, MECHANICALLY BONDED			
30 CORROSION ALLOWANCE		0.125	0.125	0.125	
31 100% X-RAY		YES	-	-	
32 STRESS RELIEVE		YES	-	-	
AIR DATA					
33 INLET AIR, °F	105		ELEVATION, FT.	120	
34 OUTLET AIR, °F	140.4		TOTAL SCFM	151514	
MECHANICAL EQUIPMENT					
35 FAN		DRIVE		DRIVER	
36 NUMBER	2	<input checked="" type="checkbox"/> V-BELT	<input type="checkbox"/> DIRECT	TYPE	ELECTRIC
37 HP / FAN	12.05	SIZE	3VX 1060	MAKE	TOSHIBA
38 RPM	330 *	NUMBER	8	SIZE	254T
39 DIAMETER	108	LARGE SHV.	TWO 4.75 OD, 4 GRV. 1 5/8	HP / DRIVER	15.0
40 BLADES	5	SMALL SHV.	TWO 25.0 OD, 4 GRV. 2 3/16	RPM	1800
41 PITCH	10.1° CLEVIS			ENCLOSURE	XP
42 MAKE	MOORE 5000 40 W/VT TIPS	<input type="checkbox"/> GEAR			
43 MATERIAL	ALUMINUM	RATIO			
44 * 80.7 dBA/FAN @ 1m		AGMA HP		VOLTAGE	230/460
45 BORE	2 3/16 INCHES	COUPLING		PHASE	3
46 ROTATION	RIGHT			CYCLES	60
47 FAN SHAFT	- TWO 2 3/16" X 36" CRS, WITH 4" STD. KEYS BOTH ENDS.				
48					
49 BEARINGS	- FOUR 2 3/16 DODGE SCM.				
50 REMARKS	LOUVERS W/FISHER AIR ACTUATOR ON EACH. HAILScreens. LADDER & WALKWAY EACH END. BUGScreens. ROBERTSHAW 365D8 VIBRATION SWITCHES.				
				WEIGHT 25,000#	

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
 (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
 As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by FIN-X, INC. 402 WEST SECOND AVENUE, OWASSO, OKLAHOMA 74055 USA
(Name and address of manufacturer)

2. Manufactured for ITS ENGINEERED SYSTEMS, INC. 6818 FM 2855, Katy, TX 77493
(Name and address of purchaser)

3. Location of installation UNKNOWN
(Name and address)

4. Type Horiz. R 593.1 R 593 2163 2002
(Shell, End, Head) (IMD's Unit No.) (CRN) (DIN's Unit No.) (Unit Bd. No.) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
Year

6. Shell: NO SHELL
Matl. (Spec. No., Grade) Nom. Thk. (In.) Corr. Allow. (In.) Dum. I.D. (In. & In.) Graph (Detail) (R. & In.)

7. Seams: SINGLE WELDED 1150 1 1/2
Long. (Weld, Dbl., Sppl., Ldg. Butt) A.T. (Spot or Full) ER. (In.) H.T. Temp. (F) Time (hr) Grth. (Weld, Dbl., Sppl., Ldg. Butt) A.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Matl. SA516-70 (b) Matl. SA516-70
(Spec. No., Grade) (Spec. No., Grade)

Location (Top, Bottom, End)	Minimum Thickness	Corrosion Allowance	Crown Radius	MAX SPAN	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a) T&P SHEET	.75	.125	---	9.25	---	---	---	---	FLAT
(b) WRAP & ENDS	.375	.125	---	4.00	---	---	---	---	FLAT

If removable, bolts used (describe other fastenings) _____
(Matl., Spec. No., Cr., Riv. No.)

9. MAWP 50 psi at max. temp. 250 °F
 Min. design metal temp. -20 °F at 50 psi. Hydro. 150 psi.

10. Nozzles, inspection and safety valve openings: SAFETY VALVE OPENINGS INSTALLED BY OTHERS.

Purpose (Inlet, Outlet, Drain)	No	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
INLET/OUTLET	1/1	8"	150RF	SA105/SA106 B	XH	WELD	WELDED	WRAPPER
VENT/DRAIN	1/1	1"	CPLG	SA105	6000#	WELD	WELDED	WRAPPER

11. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Attached _____
(Type and how) (Inch) (Inch) (Inch) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____
(Name of spec. item number, title, name and identifying number)

10" X 4" X RECTANGULAR BOX HEADERS: 5 ROW 1 PASS, "CONSTRUCTED IN CONFORMANCE WITH APPENDIX 28" DIMENSIONS: 16.875" TUBES: 1 OD, 16 BWG, 32 FT LONG 33 PIECES, MATERIAL: SA249-TP316 NO IMPACT TESTING REQUIRED PER UG20F [PLUGS] SA105 SERVICE: RECYCLE GAS

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1, "U" Certificate of Authorization No. 18,989 expires 11-10, 2004
 Date 12-30-02 Co. name FIN-X, INC. Signed Walter E. Hays
(Manufacturer) (Inspector)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by FIN-X, INC. at OWASSO, OKLAHOMA

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of OKLAHOMA and employed by ONEBEACON AMERICAN INSURANCE GROUP have inspected the component described in this Manufacturer's Data Report on 12-30-02 and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 12-30-02 Sign [Signature] Commissioned [Signature]
(Inspector) (Inspector)

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
 (Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
 As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by FIN-X, INC. 402 WEST SECOND AVENUE, OWASSO, OKLAHOMA 74055 USA
(Name and address of manufacturer)
2. Manufactured for ITS ENGINEERED SYSTEMS, INC. 6818 FM 2855, Katy, TX 77493
(Name and address of purchaser)
3. Location of installation UNKNOWN
(Name and address)
4. Type Horiz. R 593.2 R 593 2162 2002
(Type or class) (Mfg's serial No.) (CRN) (Drawing No.) (Wall Bd. No.) (Year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
Year
- to 2002
Address (Date) Code Case No. Special Service per UG-120(d)
6. Shell: NO SHELL
Mat. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)
7. Seams: SINGLE WELDED
Long. (Welded, Dbl., Singl., Lap, Burnt) R.T. (Spot or Full) E.H. (in.) H.T. Temp. (°F) Time (hr) Girth (Welded, Dbl., Singl., Lap, Burnt) A.T. (Spot, Partial, or Full) No. of Courses
8. Heads: (a) Matl. SA516-70 (b) Matl. SA516-70
(Spec. No., Grade) (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	MAX SPAN.	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	T&P SHEET	.75	.125	---	7.25	---	---	---	---	FLAT
(b)	WRAP & ENDS	.375	.125	---	4.00	---	---	---	---	FLAT

If removable, bolts used (describe other fastenings) _____
(Matl., Spec. No., Gr., Size, No.)

9. MAWP 100 psi at max. temp. 450 °F
 Min. design metal temp. -20 °F at 100 psi. Hydro. 150 psi.

10. Nozzles, inspection and safety valve openings: SAFETY VALVE OPENINGS INSTALLED BY OTHERS.

Purpose (Inlet, Outlet, Drain)	No.	Diam or Size	Type	Matl.	Nom Thk	Reinforcement Matl.	How Attached	Location
INLET/OUTLET	1/1	3"	150RF	SA105/SA106 B	SCH 160	WELD	WELDED	WRAPPER
VENT	2	1"	CPLG	SA105	6000#	WELD	WELDED	WRAPPER
DRAIN	1	1"	CPLG	SA105	6000#	WELD	WELDED	WRAPPER

11. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Attached _____
(Type and no.) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____
(Name of part, item number, Mfg's name and identifying number)

8" X 4" X
RECTANGULAR BOX HEADERS: 4 ROW 6 PASS, "CONSTRUCTED IN CONFORMANCE WITH APPENDIX 28" DIMENSIONS: 75.375"
TUBES: 1 OD. 14 BWG, 32 FT LONG 130 PIECES, MATERIAL: SA179
NO IMPACT TESTING REQUIRED PER UG20F [PLUGS] SA105 SERVICE: TOP RECYCLE

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 18-989 expires 11-10, 2004
 Date 1-10-03 Co. name FIN-X, INC. Signed [Signature]
(Manufacturer) (Inspector)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by FIN-X, INC. at OWASSO, OKLAHOMA
 I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of OKLAHOMA and employed by ONEBEACON AMERICAN INSURANCE GROUP
 have inspected the component described in this Manufacturer's Data Report on 1-10-03, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
 Date 1-10-03 Signed [Signature] Commissioned [Signature]
(Authorized Inspector) (National Board (Int., Ins.), State, Prov. and No.)

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(Name and address of manufacturer)

2. Manufactured for ITS ENGINEERED SYSTEMS, INC. 6818 FM 2855, Katy, TX 77493
(Name and address of purchaser)

3. Location of installation UNKNOWN
(Name and address)

4. Type Horiz. R 593.3 R 593 2158 2002
(HORIZ. OR VERT., STATE) (Mfg.'s serial No.) (CAN) (Drawing No.) (HORIZ. BD. NO.) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 2001
Year

to 2002
Address (Date) Code Case Nos. Special Service per UG-120(d)

6. Shell: NO SHELL
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: SINGLE WELDED
Long. (Welded, Dbl., Singl., Lap, Butt) R.T. (Spot or Full) E.H. (%) H.T. Temp. (°F) Time (hr) Girth (Welded, Dbl., Singl., Lap, Butt) A.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Matl. SA516-70 (Spec. No., Grade) (b) Matl. SA516-70 (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	MAX SPAN.	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flas Diameter	Side to Pressure (Convex or Concave)
(a)	T&P SHEET	.75	.125	---	7.25	---	---	---	---	FLAT
(b)	WRAP & ENDS	.375	.125	---	4.00	---	---	---	---	FLAT

If removable, bolts used (describe other fastenings) _____
(Matl., Bolt No., Cr., Size, No.)

9. MAWP 100 psi at max. temp. 450 °F
 Min. design metal temp. -20 °F at 100 psi Hydro. 150 psi

10. Nozzles, inspection and safety valve openings: SAFETY VALVE OPENINGS INSTALLED BY OTHERS.

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
INLET/OUTLET	1/1	2"	15ORF	SA105/SA106 B	SCH 160	WELD	WELDED	WRAPPER
VENT	2	1"	CPLG	SA105	6000#	WELD	WELDED	WRAPPER
DRAIN	1	1"	CPLG	SA105	6000#	WELD	WELDED	WRAPPER

11. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Attached _____
(Yes or No) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____
(Name of part, item number, Mfg.'s name and identifying stamp)

8" X 4" X
RECTANGULAR BOX HEADERS: 4 ROW 6 PASS, "CONSTRUCTED IN CONFORMANCE WITH APPENDIX 28" DIMENSIONS: 21.75"
TUBES: 1 OD, 14 BWG, 32 FT LONG 34 PIECES, MATERIAL: SA179
NO IMPACT TESTING REQUIRED PER UG20F [PLUGS] SA105 SERVICE: PRODUCT CLR

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 18,989 expires 11-10, 2004
 Date 12-30-02 Co. name FIN-X, INC. Signed [Signature]
(Manufacturer) (Authorized Inspector)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by FIN-X, INC. at OWASSO, OKLAHOMA

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of OKLAHOMA and employed by ONEBEACON AMERICAN INSURANCE GROUP have inspected the component described in this Manufacturer's Data Report on 12-30, 02, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 12-30-02 Signed [Signature] Commission [Signature]
(Authorized Inspector) (National Board (Name, Endorsements), State, Print and No.)