

KEWANEE HI-TEST BOILER

WELDED TWO-PASS PORTABLE
Series HT
REFRACTORY-LINED FIREBOX



for POWER and Industry Process Steam

KEWANEE BOILER CORPORATION

KEWANEE, ILLINOIS

CATALOG No. 39

KEWANEE HI-TEST SERIES HT

Two-Pass Portable Tubular Boiler for High Pressure Steam

THE KEWANEE HI-TEST TUBULAR BOILER is now in production ready for immediate duty in any Steam usage for Power service or Industrial Process.

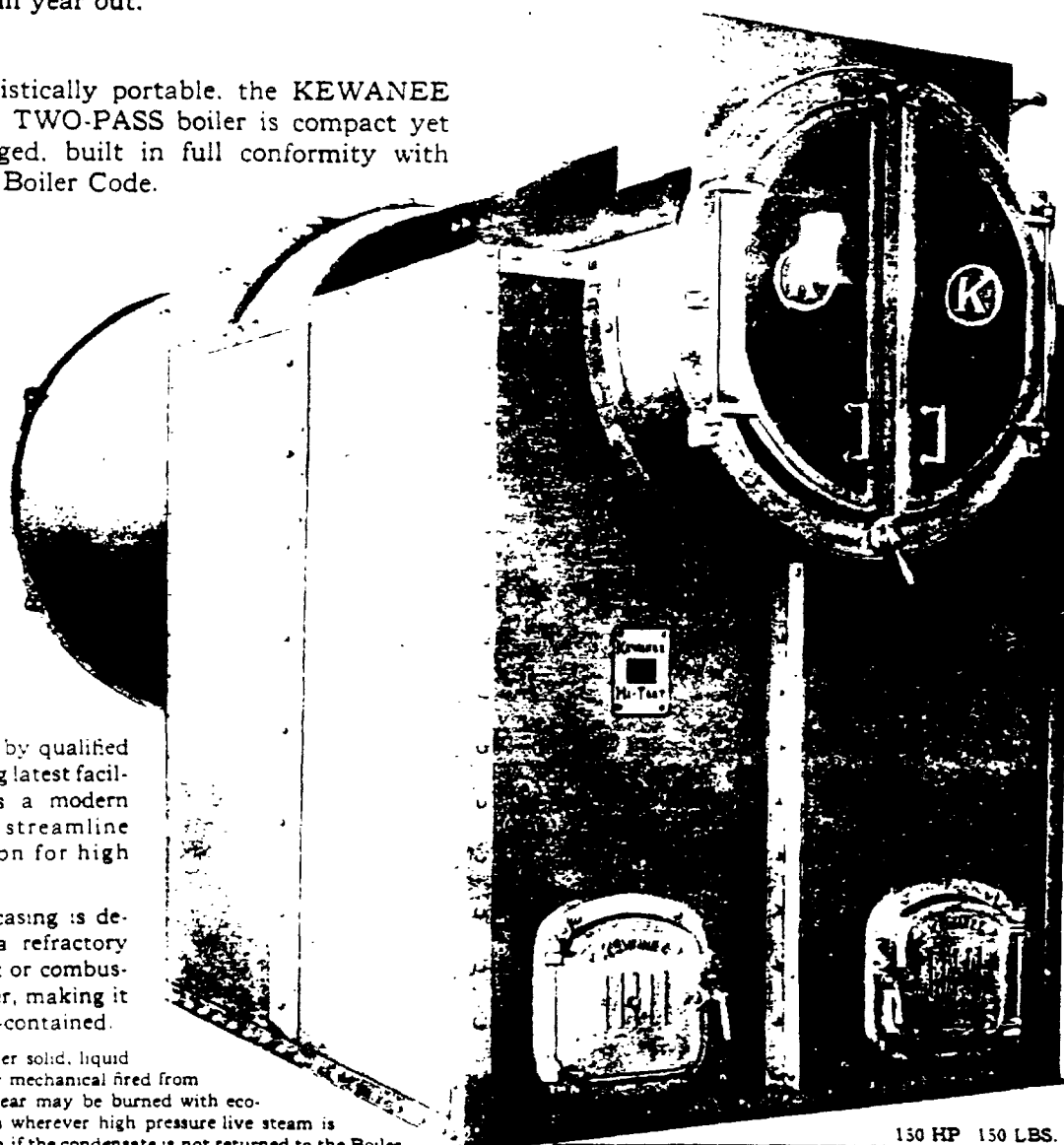
HT-SERIES has been newly contrived to fit modern ways and means of manufacture. It is planned with due regard for easy handling. Even when performing under critically heavy loads this fusion-welded steam generator is found highly efficient, offering continued economies in fuel year in year out.

Characteristically portable, the KEWANEE HI-TEST TWO-PASS boiler is compact yet extra rugged, built in full conformity with A.S.M.E. Boiler Code.

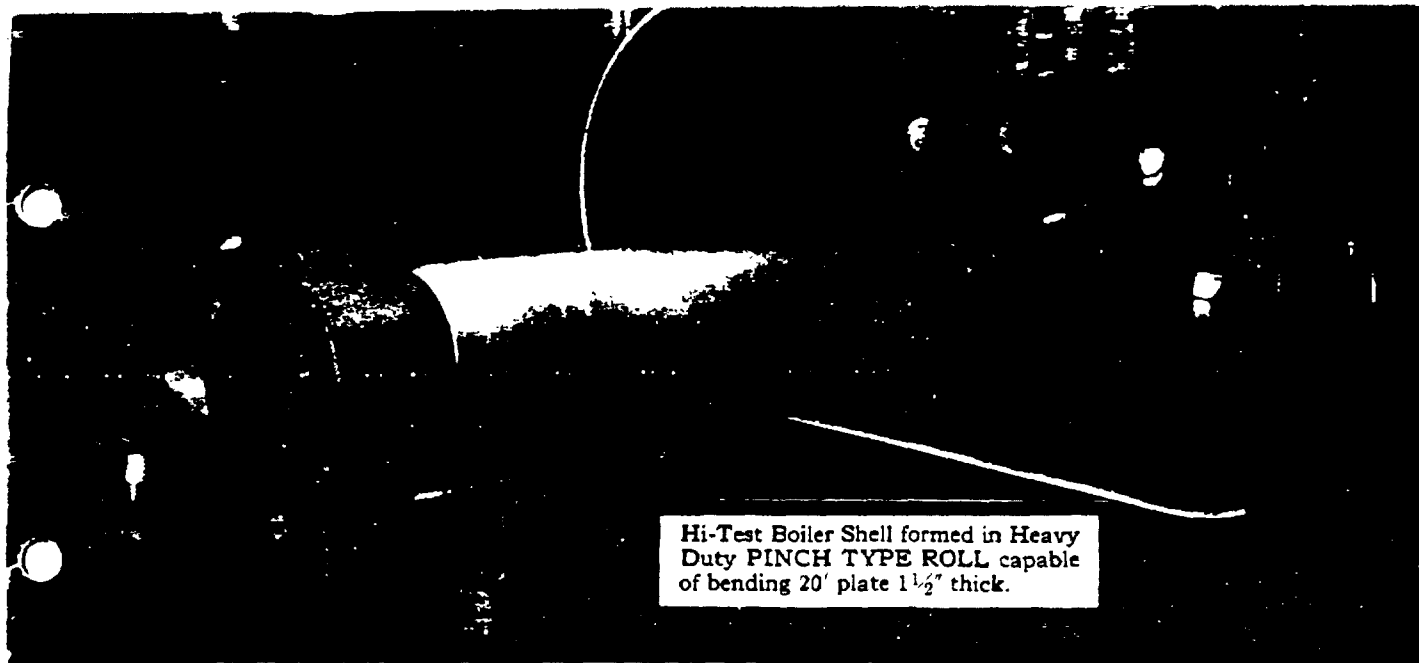
Fabrication by qualified welders using latest facilities reflects a modern practice in streamline construction for high pressure.

The metal casing is designed for a refractory lined firebox or combustion chamber, making it entirely self-contained.

All fuels whether solid, liquid or gas, hand or mechanical fired from front, side or rear may be burned with economical results wherever high pressure live steam is consumed, even if the condensate is not returned to the Boiler.



130 HP 150 LBS.



Hi-Test Boiler Shell formed in Heavy Duty PINCH TYPE ROLL capable of bending 20' plate 1½" thick.

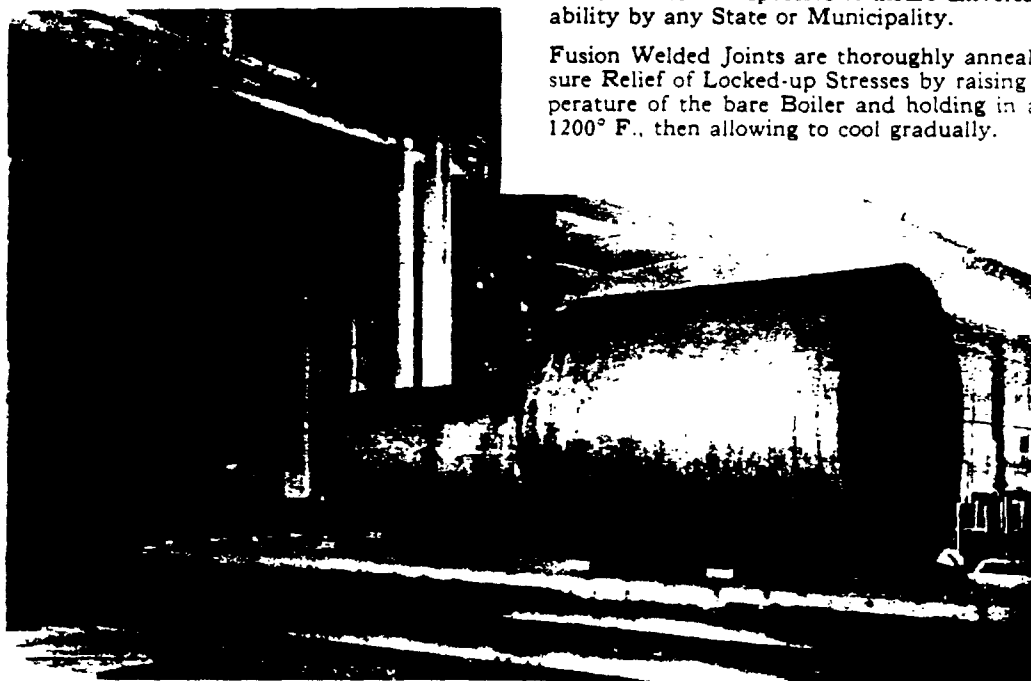
To meet stringent requirements of the A.S.M.E. Code for high pressure power boilers careful selection, preparation and assembly of all plate material is mandatory.

All joints are Fusion Welded by highly trained workmen, X-Ray checked and test-specimen results recorded.

Fusion Welded seams for the heavy flanged heads and tubular shell were adopted after thorough investigation and painstaking development of procedure controlled by code and proved by exograph inspection.

During the course of construction and after completion each boiler is rigidly inspected by a qualified Inspector licensed by the National Board of Boiler and Pressure Vessel Inspectors to insure universal acceptability by any State or Municipality.

Fusion Welded Joints are thoroughly annealed to insure Relief of Locked-up Stresses by raising the temperature of the bare Boiler and holding in a zone of 1200° F., then allowing to cool gradually.



Our huge modern Recirculating-Type Stress Relieving Furnace, photo above, the only one of its size, insures a uniformity of temperature of less than 10° variance

throughout its entire interior. This procedure is vitally important for absolute dependability, as well as ultimate safety.

KEWANEE HI-TEST Series HT

Specifications—

BOILER NUMBER		HT 50	HT 60	HT 75	HT 100	HT 125	HT 150
HORSEPOWER		50	60	75	100	125	150
STEAM RADIATION—HAND FIRED	SQ. FT.	7000	8400	10500	14000	17500	21000
—MECHANICALLY FIRED	SQ. FT.	8500	10200	12750	17000	21250	25500
HEATING SURFACE	SQ. FT.	500	600	750	1000	1250	1500
GRATE AREA OR PLAN AREA	SQ. FT.	18.3	20.3	22.5	27.5	30.2	35.7
FURNACE VOLUME	CU. FT.	72	90	105	140	181	213
FURNACE WIDTH	IN.	48	48	53	59	65	65
LENGTH	IN.	56	62	62	68	68	80
HEIGHT ABOVE GRATES	IN.	40	46	46	50	60	60
CYLINDER DIAMETER FRONT	IN.	42	42	42	48	54	54
REAR	IN.	66	66	72	78	84	84
BOILER LENGTH OVERALL	FT. IN.	12-5	13-5	14-3	15-5	16-2	18-6
BOILER HEIGHT FLOOR TO TOP OF SHELL	IN.	107	113	116	126	142	142
WATER LINE HEIGHT	IN.	95	101	104	111	124	124
STEAM SUPPLY SIZE	IN.	4	4	4	5	6	6
BLOW-OFF SIZE	IN.	2	2	2	2	2 1/2	2 1/2
FEED WATER SIZE	IN.	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
INJECTOR SUPPLY SIZE	IN.	1	1	1 1/4	1 1/4	1 1/2	1 1/2
SAFETY VALVE BOILER OPENINGS NO.—SIZE	IN.	2-2 1/2	2-2 1/2	2-3	2-3	2-3	2-3
VERIFY ALL SIZES	IN.	2-2 1/2	2-2 1/2	2-3	2-3	2-3	2-3
BREECHING DIAMETER	IN.	24	26	29	31	33	36
STACK DIAMETER	IN.	22	24	27	29	31	34
STACK HEIGHT—HAND FIRED	FT.	55	60	65	70	75	80
STACK HEIGHT—MECHANICALLY FIRED	FT.	45	50	55	60	65	70
BREECHING DIAMETER, TWO BOILERS	IN.	31	34	38	41	44	48
STACK DIAMETER, TWO BOILERS	IN.	29	32	36	38	41	45
STACK HEIGHT, TWO BOILERS, HAND FIRED	FT.	65	70	75	80	85	90
STACK HEIGHT, TWO BOILERS, MECHANICALLY FIRED	FT.	55	60	65	70	75	80
***FIREBRICK ABOVE BASE LINE	NUMBER	1300	1450	1700	2750	3250	3500
***COMMON BRICK IN BASE AND PIER	NUMBER	800	850	1100	1450	1500	1550
***2 IN. INSULATION LINING IN FURNACE	SQ. FT.	130	155	165	205	235	260
OUTSIDE SURFACE TO COVER	SQ. FT.	115	145	165	200	250	300
APPROX. SHIPPING WEIGHT							
BOILER HAND-FIRED 125 LB.	LB.	13660	15380	18870	22920	26720	30200
150 LB.	LB.	13760	15580	19270	23420	27420	30900
MECHANICALLY-FIRED 125 LB.	LB.	12470	14080	17405	21070	24630	28000
150 LB.	LB.	12570	14280	17805	21570	25330	28700
---CODE WORD, STEAM BOILER—125 LB. W. P.		HTETF	HTETG	HTETH	HTETI	HTETJ	HTETK
—150 LB. W. P.		HTEFF	HTEFG	HTEFH	HTEFI	HTEFJ	HTEFK

***No Brickwork, Furnace Refractory or Insulation included.

**For Oil, Gas or Stoker, add word to code; example—ship one HTETF OIL.

*Series 30 Nozzles for 250 lb. cast-iron or 300 lb. steel fittings.

Steam supply and blow-off sizes given are openings regularly found on boilers in stock.

EQUIPMENT—Standard—For Coal, Oil, Gas and Stoker—Boiler shell with Damper in Outlet; Flue Gas Chambers—Rear with insulation Lining, insulated Doors and Frames; Front with insulated Doors and Frame; Rear and Center Saddles; Fire Doors and Frames, Steel Casing extending to top of masonry base. Coal Hand Fired—Base Front with Ash Doors; Dead Plate; Stationary Grates.

Oil, Gas, Stoker Fired—No Base Front furnished. Prices on Special Base Fronts at extra cost.

FIRE TOOLS for Coal, Hand Fired—Hoe, Poker, Slice Bar, Flue Cleaners with handles.

For Oil, Gas, Stoker—Flue Cleaners with handles only.

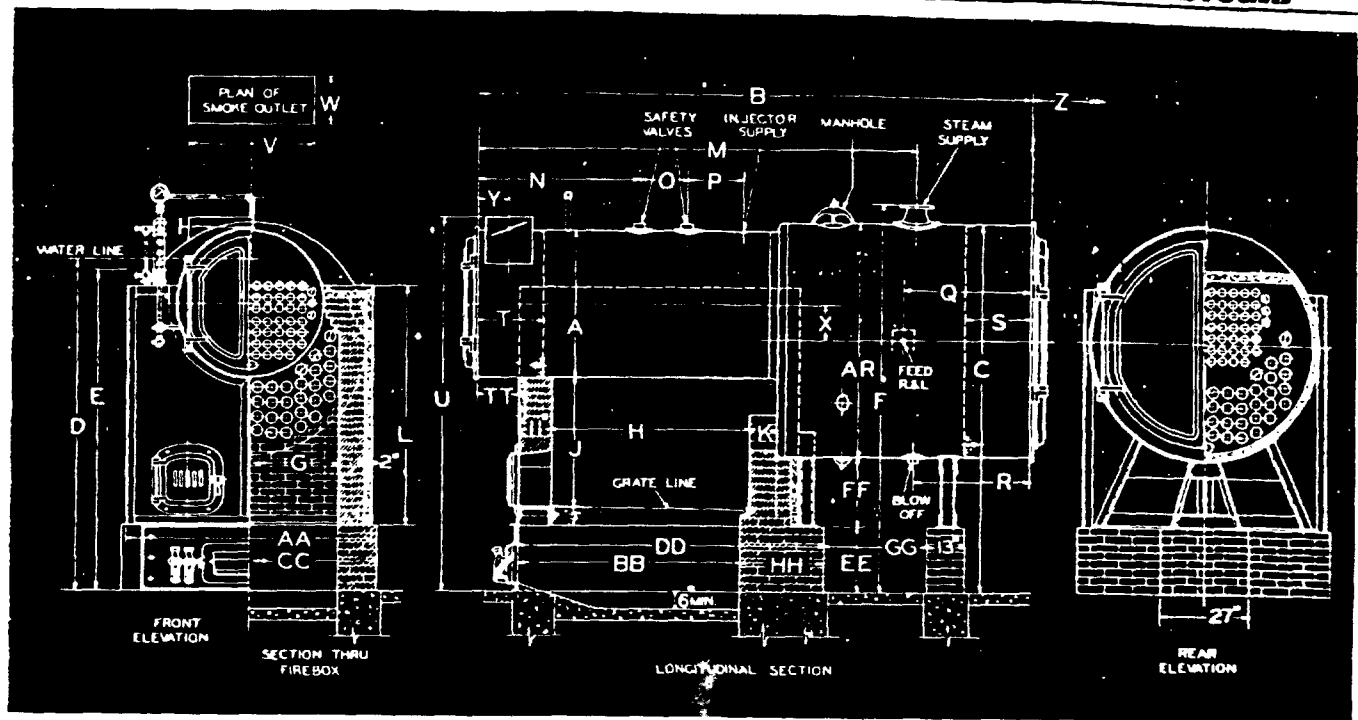
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TRIMMINGS— for Coal, Stoker, Oil, Gas Steam Gauge with Syphon and Cock; extra heavy cast iron Water Column with Water Gauge and Gauge Cocks, Compression Try Cocks; Safety Valves as required by A.S.M.E. Code; Blow-off Valve and Cock; Globe and Check Valve for feed pipe.

No other accessories or piping.

Special trimmings furnished at additional cost.

Two-Pass Portable Tubular Boiler for High Pressure Steam

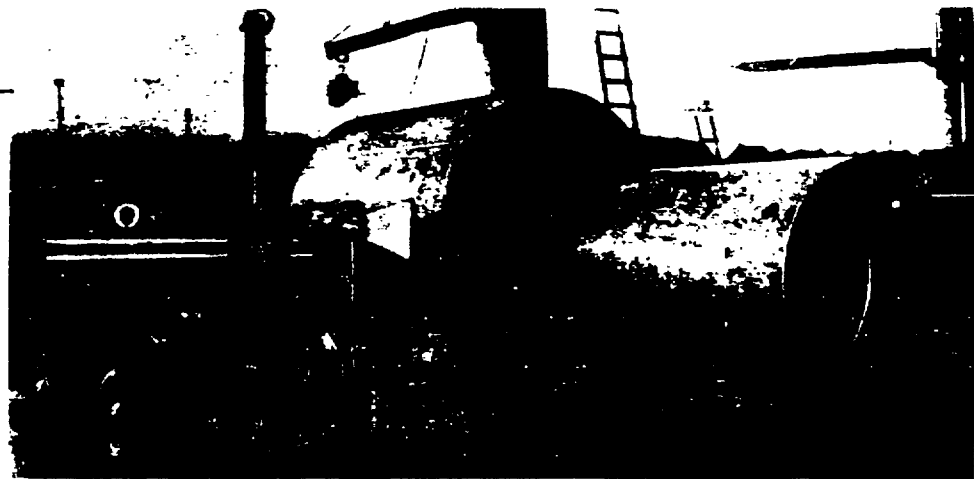


Setting Measurements—

NOTE: NO BRICKWORK, FURNACE REFRACTORY OR INSULATION INCLUDED

BOILER NUMBER		HT 50	HT 60	HT 75	HT 100	HT 125	HT 150
A—CYLINDER DIAMETER, FRONT	IN.	42	42	42	48	54	54
AR—CYLINDER DIAMETER, REAR	IN.	66	66	72	78	84	84
B—BOILER LENGTH	FT. IN.	12-5	13-5	14-3	15-5	16-2	18-6
C—BOILER HEIGHT	IN.	107	113	116	126	142	142
D—WATER LINE HEIGHT	IN.	95	101	104	111	124	124
E—WATER COLUMN HEIGHT	IN.	93	99	102	109	122	122
F—STEAM NOZZLE HEIGHT	IN.	113	119	122	132	149	149
X—CYLINDERS—CENTER TO CENTER	IN.	81 $\frac{1}{2}$	81 $\frac{1}{2}$	113 $\frac{1}{4}$	113 $\frac{1}{4}$	113 $\frac{1}{4}$	113 $\frac{1}{4}$
G—FURNACE WIDTH	IN.	48	48	53	59	65	65
H—FURNACE LENGTH	IN.	56	62	62	68	68	80
J—FURNACE HEIGHT ABOVE GRATES	IN.	40	46	46	50	60	60
K—BRIDGEWALL WIDTH	IN.	41 $\frac{1}{2}$	41 $\frac{1}{2}$	9	9	9	9
L—FURNACE CASING HEIGHT ABOVE BASE	IN.	71	77	79	87	100	100
M—STEAM SUPPLY LOCATION	IN.	121	128	135	146	149	177
N—SAFETY VALVE LOCATION	IN.	53	54	54	54	60	63
O—SAFETY VALVE LOCATION	IN.	10	14	16	16	16	16
P—INJECTOR STEAM SUPPLY LOCATION	IN.	10	11	13	20	17	26
Q—FEED WATER LOCATION	IN.	34	39	42	43	45	45
R—BLOW-OFF LOCATION	IN.	32	32	32	34	36	36
S—REAR FLUE GAS CHAMBER DEPTH	IN.	20	20	20	22	24	24
T—FRONT FLUE GAS CHAMBER DEPTH	IN.	20	20	20	22	24	24
TT—SHELL EXTENSION BEYOND CASING	IN.	10	10	10	12	14	15
U—BREECHING CONNECTION, HEIGHT	IN.	108	114	117	127	143	143
V—LENGTH	IN.	36	36	36	42	46	46
W—WIDTH	IN.	14	14	14	16	18	18
Y—LOCATION	IN.	9	9	9	10	11	11
Z—REAR FLUE DOOR CLEARANCE	IN.	36	36	39	42	45	45
AA—FURNACE CASING WIDTH, INSIDE	IN.	70	70	75	90	96	96
BB—LENGTH	IN.	64	70	70	76	78	88
CC—BASE WIDTH	IN.	78	78	83	98	104	104
DD—LENGTH	IN.	90	96	101	107	107	119
EE—HEIGHT	IN.	15	15	18	18	18	18
FF—SADDLE HEIGHT, FRONT AND REAR	IN.	26	32	26	30	40	40
GG—REAR BRICK PIER LOCATION	IN.	24	32	36	40	42	57
HH—BASE REAR WALL THICKNESS	IN.	26	26	31	31	31	31

X Ray Inspection of Fusion-Welded Seams on Hi-Test Boiler Shell by Radiographic Unit mounted on running gear.



Tests

X-RAY-RADIOGRAPH ANALYSIS:

All seams subject to bursting stresses are radiographed on films which are filed for permanent record and future reference.

By careful study of these films the inspector is aided in determining the soundness of the weld.

As a further check up on thoroughness of workmanship and physical properties the inspector subjects the test specimens to Tensile, Bend and Specific Gravity or Density tests.

HYDROSTATIC TEST:

The finished product is subjected to a Hydrostatic Test Pressure EQUAL to one and one-half times its Maximum allowable Working Pressure in accordance with the A.S.M.E. Code requirements.

Each boiler is inspected during the course of construction and tested by a qualified inspector of a recognized steam boiler inspection and insurance company.

Design

The simplest possible shapes are used. Two cylindrical shells of different diameters are joined with tube heads by Fusion Welding, only a few diagonal head braces are needed. Front and rear flue gas chambers are an integral part of the boiler shell, eliminating joints.

PLATE —

Shells and heads are fabricated from firebox and flange steel, 55,000 to 65,000 pounds per square inch tensile strength. Internal stresses are taken up without excess weight due to the cylindrical shape with no stay bolts

or cross braces.

TUBES —

This new HI-TEST BOILER has High Quality Seamless Steel Tubes as standard equipment 4" direct and 3" return. The tube layout provides for free unrestricted water circulation sweeping steam bubbles from the heat transmitting surface so a steady water line is maintained.

All tubes can be cleaned or removed from either the front or rear of the boiler.

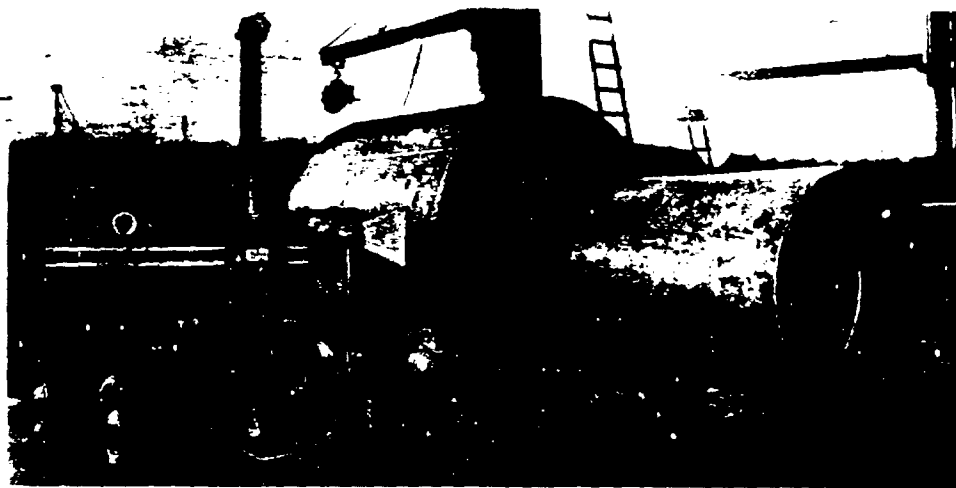
Conservative Rating

In accord with accepted standards ten square feet of heating surface constitute one boiler horsepower.

Heating surface, furnace volume, water content; Steam space, disengaging or liberating area all basic fundamentals, have been incorporated in technically correct ratio for good boiler design.

Kewanee experience evolved through seventy-two years of research in steam generation predetermines the exact location of the steam nozzle which assures delivery of steam not less than 97% quality at high overloads without the necessity of dry pipes or baffles.

X Ray Inspection of Fusion-Welded Joints on Hi-Test Boiler Shell by Radiograph Unit mounted on running gear



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KEWANEE HI-TEST *Series HT*

Furnace —

The available furnace volume is large, and proportionate to efficient combustion requirements.

The heavy casing of reinforced steel panels is easily erected, and accommodates any commercial insulation as well as refractory fire brick lining. This design insures permanence, reduces radiant heat losses to a minimum, and eliminates infiltration. More uniformly effective furnace temperatures are maintained and high overall Combustion Efficiency is developed with lower operating and maintenance costs. Factors very important to all Power Plant Operators.

The Rear Flue Gas Chamber diverting burned gases of combustion out of the direct tubes into the return tubes is thoroughly well protected against radiant heat losses by means of high temperature-resistant factory-formed liners and insulated flue doors.

ACCESSIBILITY for Cleaning and Inspection — Ample cleanout handholes and manhole opening provided for easy periodic internal cleaning and inspection.

Handholes in front and rear heads are large enough to permit removing tubes through them.

CASTINGS — The flue door, fire door and base front assemblies are cast in extra strong fine grained quality iron to withstand the hard usage demanded in daily service. Surfaces between doors and frames are machine ground to a gastight fit.

DOORS Exposed to Temperatures are Heavily Insulated with material manufactured specially to meet KEWANEE specifications.

Those scientific features are outlined briefly in the preceding few salient paragraphs in order to present this KEWANEE HI-TEST BOILER as one of the most outstandingly modern of its type.

It is ready to serve every commercial or private demand likely to arise in Industrial Plants, Laundries, Hospitals, Hotels, Creameries, Dairies, Food Product and Meat Packing Plants, Canneries, Chemical Plants, Railroad Shops, etc.



Our Hi-Test welded line ships from the Kewanee factory expertly packed for quick assembly and setting on the masonry base all ready for the refractory lining of the Firebox casing.

With brickwork reduced to a minimum these units are readily transferable at nominal cost for reinstallation should the necessity arise.