International Journal of Advanced Technology in Engineering and Science
Vol. No.4, Issue No. 03, March 2016
www.ijates.com
ijates
ISSN 2348 - 7550

STUDY OF HEAT EXCHANGERS WHERE METAL FAILS

Sachin Gavande [1], Durgesh Gomase [2], Ajinkya Wagh[3], Mahendra Pawar[4]

[1,2,3] *B.E. Scholar BVCOE&RI Nashik (Pune University)*

[4] *Assistant Professor mechanical Dept. BVCOE&RI Nashik(India)*

ABSTRACT

A heat exchanger consist of an elongated tubular cylindrical member having fluid ingress and egress openings adjacent to its other ends and external flanges at opposite ends one of which flanges has a counter bore facing in the direction away from the cylindrical member. A purity of graphite tubes within the cylindrical member having their opposite ends connected to graphite end chamber one of which is connected through a graphite end member to one end of the cylindrical member and the other of which has an outer diameter slightly less than the inside diameter of the cylindrical member and within which it is floating or floats. The floating header has an external circumferential groove with outwardly inclined ends. A seal is provided at the end of the cylindrical member at which the floating header is located which gasket includes packing in the counter bore in the adjacent flange and a gland member floating on the floating header and adjustable in the direction of the flange. A part of the gland member overlies one end of the external groove in the floating header member. A fixed graphite end member abuts the end of the floating header facing in the direction away from the circular member and is clamped there to by a clamp plate engaging the other side of the end member. A sleeve formed of a plurality of accurately shaped parts is located in the circumferential groove in the floating header with an end underlying the gland member and has an outer groove spaced from the gland member in which a split ring is located elongated radially of the sleeve and having its radial outer or circumferential surface inclined radially outward in the direction away from the circular member. A retainer ring surrounds the split ring and is connected to the clamp plate at the end of the second end member facing in the direction away from the cylindrical member by a plurality of bolts.

Keywords: Effectiveness ,LMTD

I. INTRODUCTION

A heat exchanger comprising an elongated tubular cylindrical member having fluid ingress and egress openings adjacent to its opposite ends and external flanges at opposite ends one of which flanges has a counter bore facing in the direction away from the cylindrical member. A plurality of graphite tubes within the cylindrical member having their opposite ends connected to graphite headers one of which is connected through a graphite end member to one end of the cylindrical member and the other of which has an outside diameter slightly less than the inside diameter of the cylindrical member and within which it is movable or floats. The floating header has an external circumferential groove with outwardly inclined ends. A seal is provided at the end of the

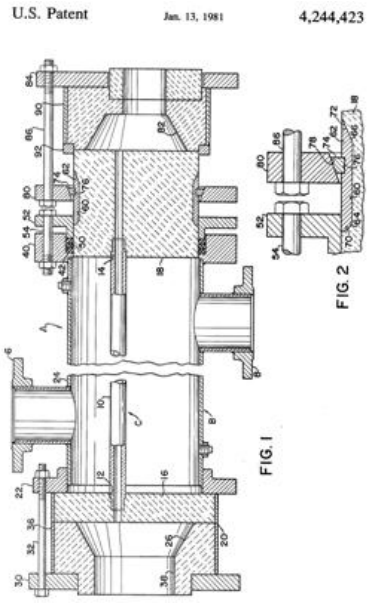
cylindrical member at which the floating header is located which seal includes packing in the counter bore in the adjacent flange and a gland member movable on the floating header and adjustable towards the flange. A part of the gland member overlies one end of the external groove in the floating header member. A second graphite end member abuts the end of the floating header facing in the direction away from the cylindrical member and is clamped thereto by a clamp plate engaging the other side of the end member. A sleeve formed of a plurality of accurately shaped parts is located in the circumferential groove in the floating header with an end underlying the gland member and has an external groove spaced from the gland member in which a split ring is located extending radially of the sleeve and having its radial outer or circumferential surface inclined radially outwardly in the direction away from the cylindrical member. A retainer ring surrounds the split ring and is connected to the clamp plate at the end of the second end member facing in the direction away from the cylindrical member by a plurality of bolts along the power grid. Similarly, this technique is used in every moving systems like those that wheels rotate of car, motorbike, etc. These energy used for headlights, starter purpose & we can a drive car by this electric power.

II. ACTUAL CONCEPT

The heat exchanger are also designed to handle corrosive fluids on both sides. In process industries there are many corrosive application like HCL, H2SO4,,inorganic & organic chemicals.

III. WHY GRAPHITE?

.Excellent corrosion resistance to many organic & inorganic compounds.
.Higher resistance to thermal & mechanical shock .
.Economical as compared to exotic metal.
.Thermal & electrical conductivity .
. Simple bonding technique.
.Good withstanding at higher temperature without creeping or degrading.



IV. DETAILED DESCRIPTION

A heat exchanger of the character define comprising an elongated shell having a tubular cylindrical member having flange members adjacent to its other ends, one of said flange members having a counter bore facing in the direction away from said circular member, a plurality of tubes having their opposite ends connected to header members, means including an end component connecting one of said header members to the other of said flange members, the other of said header members having an outer diameter slightly less than the inside diameter of said end of said circular member at which said one of said flange members is located and being movable there in, said other of said header members having an external circumferential groove there in with at least the end there of farthest from said one of said flange members being outwardly inclined, other end member adjacent to the end of said other of said header members facing in the direction away from said cylindrical member, means for clamping said other end member to said other of said header members comprising a sleeve member formed of a plurality of accurately shaped parts located in said circumferential groove in said other of said header members and having at least the end there of furthest from said one of said flange members beveled complementary to the taper of the adjacent end of said groove in said other of said header members, a split ring member surrounding said sleeve member and having its radial outer or circumferential surface inclined radially outwardly in the direction away from said end of said cylindrical member at which said one of said flange members is located, a retainer ring member around said split ring member, a clamp plate at the end of said other of said end members at the end there of facing in the direction away from the end of said circular member at which said one of said flange members is located, and means for suitable connecting said retainer ring member to said clamp plate

V. ALTERNATIVE USE OF THIS TECHNIQUE.

1)Hydrogen bromide acid

2)By combustion of Hydrogen & bromine gas followed by absorption .

VI. CONCLUSION

Hydrogen and bromine gases are dangerous to health hence to run these chemical process it needs to convert these gases to liquid form which can be use in different chemical process like pharmaceuticals ,also it quiet easy to handled chemical in liquid state.

Applications

1)Rayon industries
2) Steel industries
3) Paper and pulp industries
4) Agrochemical and fertilizer industries

REFERENCES

US4119141 *	May 12, 1977	Oct 10, 1978	Thut Bruno H	Heat exchanger
US3833055 *	Jul 24, 1972	Sep 3, 1974	Union Carbide Corp	Shell and tube heat exchanger
US20090056922 *	Aug 26, 2008	Mar 5, 2009	Behr Gmbh & Co. Kg	Heat exchanger