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classmate

Assignment 2 CONTRACTOR COUNTRY OF THE PERSON OF THE PERS

Evaluation of area of compensation of a nozzle from a process vessel. mm (1. +210.1)

For the ressel in Assignment 1 Find out the ring pad dimensions (I.D/O.D and turckness). Mean actions in dealines of the services

No 2 2 le 0.D. = 0.25 m

Inside polusion of nozzle: Not Desired Lengue of nozzle above surface: 0.12m

From Assignment i me have the following values =>

P = 800 kPa × 1.05 (51. for safety)

f = 120 MPa

weld joint & Do = 0.25 m -> (NOZZIE Outer Diameter)
Officiency
Given

t21 = P Do 2fJ+P Charles Sull Wall

= 800 × 10^3 × 105 × 0.25

2 (120×106) (0.85) + (800×102×1.05)

 $t_{7} = 0.001025 \text{ m}$

= 1.025 mm

nortle mickness

200130020 Now adding corrosion albowance of 2mm (1.025+2) mm 3.025 mm (sponstrus bur deb) art suctanous Nearest available standard thickness = 5 mm DESTRUCTION SISSONIAS HOW MAY INSTRUCT 00 tn = 5 mm tr = 6.15 mm -> from previous assignment 1 theoretical Shell tuickness 40.120 MPa d = 0 do - 2 to 0.25 - 2 (0.005) =) 0.24 m · of 9 Je distriction Now me have $H_1 = \sqrt{(d+2c)(t_n-c)}$ coorrosion abovand $H_1 = \sqrt{(0.24 + 2(0.002))(0.005 - 0.002)}$ HI = N 0.244 x 0.003 0.02705 m 27.05 mm

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Longin of nozzle above surface = 0:12 m (Given in)
question

Since, H,=0.02705 m < 0.12 m

i.e. H = 0-02705 m

SPnce inside potrusion le Not Desired me have

H2 = 0

As = excess area available in the shell within boundary limit acting as reinforcement

= (d+2c)(ts-tr-c)

ts = actual shell thickness

= 9 mm (from Assignment 1) = 0.009 m

 $As = \begin{bmatrix} 0.24 + 2(0.002) \end{bmatrix} \begin{bmatrix} 0.009 - 0.00615 - 0.002 \end{bmatrix}$ $= 0.0002074 m^{2}$ $= 2.074 \times 10^{-4} m^{2}$

Ao = area of the nottle external to the

Vessel available for compensation

 $= 2H_1 (t_n - t_r' - c)$ = 2(0.02705)(0.005 - 0.001025 - 0.002) $= 0.0001068 m^2$

9 1.068×10-4 m2

-> Ai = area of the nozzle Enseal compensation

= 2 H2 (th-2c)

the will unside smaller sullies 38 coult 20 12 10 plantatod Incharge

Terry Program outer diameter of North An = Ao + Ai (Excess area available Man de la line en 221e for Man reinforcement)

 $A_{n} = 0.0001068 + 0$

0.0001068 m2

A = basic area being reduced to the opening

(d+2c)+x

(0.07-10A) (0.002 - 0.00103A

THE POLY O'SO. I. 1-

do 8201000.0

 $= \left[0.24 + (2 \times 0.002)\right] 0.00615$

= 0.244 × 0.00615

of 1000 = 10000000150 m2-18100 188/1000 C all as he was the first the season

& actual shell thickness

An

Now $A_{S}+A_{R} = 0.0001068 + 0.00002074$ = 0.0003142 m2

we can see that 100000

Since, A > As+An
(0.0015) (0.0003142)

is neccessary.

Now [A - (Ast An)] area is to be provided using RPng Pad 2 weldments.

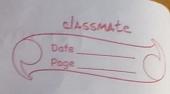
Area to be compensated = A - (As + An)= 0.0015 - 0.0003142= $0.0011858 m^2$

Now Parlac

Ar > 0.0011858 = $\left\{ 2(d+2c) - (d+2c+2+r')\right\} t_p$ = $\left\{ 2(0.244) - (0.244+2(0.001025))\right\} t_p$

tp = thickness & ringpad tp = 0.0011958 0.24195

tp = 0.0049 m



Nows adding corrosion allowance (+2mm)

0.0049 + 0.002

= 0.0069 m

Nearest available standard Thickness

Inner diameter of Ringpad = outer diameter of Nozzle dinha = 0.25 m homesicis - bolipall

And we know

outer diameter of

Ring Pad = 2x (d+2c)

 $= 2 \times (0.24 + 2(0.002))$

= 2 (0-244)

douter. = 0.488 mon

Ring Pad Dimensions:

Inner Diameter = 0.25 m = 250 mm

Outer Diameter = 0.488m = 488 mm

7 mm Thickness =