KUIS PERPINDAHAN PANAS

10 OKTOBER 2023

Kerjakan secara berkelompok (5 orang) soal dalam Problem Buku Kern chap.6

KELOMPOK	ANGGOTA	NOMOR PROBLEM KERN CHAP.6
1	FASKA ULUL Azmi Anita Budi Krisnawati I0520006 Rana Fadhilah I0521080 Achmad Fadel Wisudawan I0522001 Adelfi Lingga Dian Lukita I0522003	6.3
2	Anggun Triastuti Handayani I0522011 Aninda Dianing Tyas I0522012 Arneta Nurili Fitriani I0522014 Athaya Jasmine Nabila I0522016 Bayu Akbarul Ikhsan I0522021	6.4
3	Bunga Nabila Maulidah I0522024 Calista Adiwidya I0522026 Dafiq Alghifari Naryanto I0522030 Dewi Mulya Ningsih I0522032 Dzaky Akmal Ibrahim I0522036	6.5
4	Eva Nur Safitri I0522039 Fadiah Luthfi Sya'arani I0522041 Fidela Rasendriya I0522045 Fredyka Nashwa Ramadhani I0522046 Ihsan Hafidz Salim I0522051	6.6

KELOMPOK	ANGGOTA	NOMOR PROBLEM KERN CHAP.6
5	Jauza Qurrotu 'Aini I0522056 M Asyraf Huwaidi Candra I0522061 Masayu Larasati Putri Darmastuti I0522063 Muhammad Gasim I0522070 Muhammad Nabil Afaf Farahi I0522071	6.7
6	Muhammad Reza Maulana I0522074 Muhammad Sadewo Prakoso I0522076 Nabila Rizky Angelina I0522079 Nararya Daniswara I0522080 Nasywa Azzahra I0522081	6.10
7	Nouvendario Briliant Hernandarestu 084 Ratna Wijayati I0522089 Rifka Khoirunnisa I0522092 Risang Dewi Prita I0522093 Salma Indah Rahmawati I0522094	6.11
8	Sinta Dewi Futhna Maladatu I0522104 Veronika Kiki Julianti I0522113 Muhammad Rakha Raditya Syahputra Renita Ristianti ahmad zuhud zidaan	6.12

6.3. O-xylene coming from storage at 100°F is to be heated to 150°F by cooling 18,000 lb/hr of butyl alcohol from 170 to 140°F. Available for the purpose are five 20-ft hairpin double pipe exchangers with annuli and pipes each connected in series. The exchangers are 3- by 2-in. IPS. What is (*a*) the dirt factor, (*b*) the pressure drops? (*c*) If the hot and cold streams in (*a*) are reversed with respect to the annulus and inner pipe, how does this justify or refute your initial decision where to place the hot stream?

6.4. 10,000 lb/hr of 57°API gasoline is cooled from 150 to 130°F by heating 42°API kerosene from 70 to 100°F. Pressure drops of 10 psi are allowable with a minimum dirt factor of 0.004. (*a*) How many 2½- by 1¼-in. IPS hairpins 20 ft long are required? (*b*) How shall they be arranged? (*c*) What is the final fouling factor?

6.5. 12,000 lb/hr 26°API lube oil (see Example 6.3 in text for viscosities) is to be cooled from 450 to 350°F by heating 42°API kerosene from 325 to 375°F. A pressure drop of 10 psi is permissible on both streams, and a minimum dirt factor of 0.004 should be provided. (*a*) How many 20-ft hairpins of 2½- by 1¼-in. IPS double pipe are required? (*b*) How shall they be arranged, and (*c*) what is the final dirt factor?

6.6. 7,000 lb/hr of aniline is to be heated from 100 to 150°F by cooling 10,000 lb/hr of toluene with an initial temperature of 185°F in 2- by 1-in. IPS double pipe hairpin exchangers 15 ft long. Pressure drops of 10 psi are allowable, and a dirt factor of 0.005 is required. (*a*) How many hairpin sections are required? (*b*) How shall they be arranged? (*c*) What is the final dirt factor?

6.7. 24,000 lb/hr of 35°API distillate is cooled from 400 to 300°F by 50,000 lb/hr of 34°API crude oil heated from an inlet temperature of 250°F. Pressure drops of 10 psi are allowable, and a dirt factor of 0.006 is required. Using 20-ft hairpins of 4- by 3-in. IPS (*a*) how many are required, (*b*) how shall they be arranged, and (*c*) what is the final fouling factor?

6.10. 6330 lb/hr of toluene is cooled from 160 to 100°F by heating amyl acetate from 90 to 100°F using 15-ft hairpins. The exchangers are 2- by 1¼-in. IPS. Allowing 10 psi pressure drops and providing a minimum dirt factor of 0.004 (*a*) how many hairpins are required, (*b*) how shall they be arranged, and (*c*) what is the final dirt factor?

6.11. 13,000 lb/hr of 26°API gas oil (see Example 6.3 in text for viscosities) is cooled from 450 to 350°F by heating 57°API gasoline under pressure from 220 to 230°F in as many 3- by 2-in. IPS double pipe 20-ft hairpins as are required. Pressure drops of 10 psi are permitted along with a minimum dirt factor of 0.004. (*a*) How many hairpins are required? (*b*) How shall they be arranged? (*c*) What is the final dirt factor?

6.12. 100,000 lb/hr of nitrobenzene is to be cooled from 325 to 275°F by benzene heated from 100 to 300°F. Twenty-foot hairpins of 4- by 3-in. IPS double pipe will be employed, and pressure drops of 10 psi are permissible. A minimum dirt factor of 0.004 is required. (*a*) How many hairpins are required? (*b*) How shall they be arranged? (*c*) What is the final dirt factor?