

# Mechanical Design Dan Schedulling Pada Proyek Penambahan Heat Exchanger Untuk Mempertahankan Temperature Outlet Fluida = Mechanical Design and Schedulling on the Project of Additional of Heat Exchanger to Maintain Fluid Outlet Temperature

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## Abstrak

Central gathering station 10 (CGS-10) menampung seluruh fluida dari beberapa sumur minyak. Incoming fluida di area CGS-10 saat ini sebesar 212.000 BOPD. Pada tahun 2030 akan dilakukan peningkatan produksi sebesar 312.000 BOPD. Beberapa skenario yang dilakukan menghasilkan kesimpulan performa heat exchanger sudah tidak normal karena temperature outlet maksimum fluida pada berbagai kondisi tidak mencapai 175°F. Setelah dilakukan penilaian kecukupan kapasitas pada fasilitas yang ada, perlu adanya penambahan heat exchanger. Pada praktik keinsinyuran ini, analisis mechanical design dilakukan berdasarkan datasheet proses dan penjadwalan proyek berdasarkan analisis material take off (MTO) pada pekerjaan konstruksi civil & piping, dibantu dengan software Microsoft Project yang mempermudah dalam pembuatan engineering, procurement & construction (EPC Schedule). Dari Praktik keinsinyuran ini didapatkan material Tubes SA 213 TP316L ; Tubesheet, Baffles/Tube Support & Floating Head Cover SA 240-316L ; Tie Rods & Spacers SS 316L ; Bolt & Nut SA-193-B7 & SA-194- 2H ; Shell & Shell Cover SA 516 Gr.70 ; Shell Flange SA 105 ; Channel/Bonnet, Channel Cover & Channel Flange SA 105 + SA 240-316L Clad. Jalur kritis pada aktivitas bidding process, project management & administration, engineering, procurement, heat exchanger installation, dan pre-commissioning & commissioning dengan total keseluruhan durasi proyek yaitu 543 Hari.

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Central gathering station 10 (CGS-10) accommodates all fluids from several oil wells. Incoming fluid in the CGS-10 area is currently 212,000 BOPD. In 2030, production will increase by 312,000 BOPD. Several scenarios carried out resulted in the conclusion that the heat exchanger performance was not normal because the maximum outlet temperature of the fluid under various conditions did not reach 175°F. After assessing the capacity adequacy of existing facilities, it is necessary to add a heat exchanger. In this engineering practice, mechanical design analysis is carried out based on process data sheets and project scheduling based on material take off (MTO) analysis in civil & piping construction work, assisted by Microsoft Project software which makes it easier to create engineering, procurement & construction (EPC Schedules). From this engineering practice, the material Tubes SA 213 TP316L was obtained; Tubesheet, Baffles/Tube Support & Floating Head Cover SA 240-316L ; Tie Rods & Spacers SS 316L ; Bolt & Nut SA-193-B7 & SA-194-2H ; Shell & Shell Cover SA 516 Gr.70 ; Shell Flange SA 105; Channel/Bonnet, Channel Cover & Channel Flange SA 105 + SA 240-316L Clad. The critical path includes bidding process, project management & administration, engineering, procurement, heat exchanger installation, and pre-commissioning & commissioning activities with a total project duration of 543 days.