

# **PENYELESAIAN *VEHICLES ROUTING PROBLEM* DALAM MEMINIMUMKAN WAKTU TRANSPORTASI PT PETROGAS PRIMA SERVICES**

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## **ABSTRAK.**

PT Petrogas Prima Services adalah perusahaan yang bergerak dalam perbaikan Tabung Gas LPG 3 KG dan telah memenuhi standar ISO 9001, 14001, serta 45001. Perusahaan ini berlokasi di Jalan Magelang - Yogyakarta Km 12, Meduro, Bojong, Kecamatan Mungkid, Kabupaten Magelang, Jawa Tengah 56512. Transportasi sering menjadi tantangan dalam distribusi barang. Masalah lainnya adalah menentukan rute yang paling optimal dari segi jarak dan waktu tempuh. Fokus penelitian ini adalah mengoptimalkan jarak dan waktu rute pengiriman tabung gas 3kg PT Petrogas Prima Services menggunakan pendekatan *Vehicle Routing Problem* (VRP). Tantangan utamanya adalah menentukan distribusi barang dari sumber agar semua kebutuhan di tujuan terpenuhi dengan waktu tempuh seminimal mungkin. Dalam kegiatan distribusi produk PT Petrogas Prima Services, perhitungan dan optimasi waktu transportasi dilakukan dengan metode VRP, yaitu Nearest Insert dan Nearest Neighbor untuk verifikasi. Hasil dari metode ini menghasilkan tiga rute signifikan dimana rute G-C6-C1-C7-G untuk kelompok 1 sepanjang 32,70km, rute G-C8-C5-C4-G untuk kelompok 2 sepanjang 26,50km, dan rute G- C2-C3-G sepanjang 54,50km.

**Kata kunci:** Tabung gas, *Vehicles Route Problem*, *nearest neighbour*, *nearest insert*

## **SOLVING VEHICLE ROUTING PROBLEMS IN MINIMIZING TRANSPORTATION TIME AT PT PETROGAS PRIMA SERVICES**

### **ABSTRACT**

PT Petrogas Prima Services is a company that specializes in the repair of 3 KG LPG Gas Cylinders and has achieved ISO 9001, 14001, and 45001 certifications. This company is located at Magelang – Yogyakarta Road Km 12, Meduro, Bojong, Mungkid District, Magelang Regency, Central Java 56512. Distributing goods often presents a challenge in terms of transportation. Another issue is figuring out the most efficient route in terms of distance and travel time. This research aims to optimize the distance and time of the delivery route for 3kg gas cylinders for PT Petrogas Prima Services by utilizing the Vehicle Routing Problem (VRP) approach. The primary challenge is to determine how goods are distributed from the source in a way that meets all needs at the destination while minimizing travel time. PT Petrogas Prima Services utilizes the VRP method, specifically the Nearest Insert and Nearest Neighbor, to calculate and optimize transportation time in its product distribution activities. The method yields three important routes: route G-C6-C1-C7-G, which is 32.70km long and is for group 1; route G-C8-C5-C4-G, which is 26.50km long and is for group 2; and route G-C2-C3-G, which is 54.50km long.

**Keywords:** Gas cylinder, Vehicles Route Problem, nearest neighbor, nearest insert

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