

**PENENTUAN LAJU KOROSI DAN SISA UMUR PAKAI PIPA  
PADA JALUR PIPA PRODUKSI NAPHTHA OIL DARI OXYGEN  
STRIPPER RECEIVER 31-V-101 KE OXYGEN STRIPPER  
OVERHEAD PUMP 31-P-102 A/B DI PT PERTAMINA  
(PERSERO) REFINERY UNIT (RU) VI BALONGAN  
KABUPATEN INDRAMAYU, PROVINSI  
JAWA BARAT**

---

**SARI**

**PT Pertamina (Persero)** adalah perusahaan BUMN yang bergerak di bidang industri minyak dan gas. Dalam kegiatan produksinya **PT Pertamina (Persero)** memiliki beberapa unit kilang. **Refinery Unit (RU) VI Balongan** merupakan salah satu unit kilang minyak di Indonesia dengan kapasitas *125 Million Barrels Stream per Day* (MBSD). Pada kegiatan produksi dan transportasi minyak dan gas, **Refinery Unit (RU) VI Balongan** menggunakan berbagai macam peralatan yang berbahan dasar logam, diantaranya adalah pipa. Pipa berbahan dasar logam digunakan karena tahan terhadap temperatur dan tekanan yang tinggi. Peralatan tersebut pada kegiatan produksi serta transportasi minyak dan gas dapat mengalami kerusakan seiring dengan berjalannya waktu. Kerusakan yang terjadi disebabkan akibat korosi ataupun mekanis. Korosi merupakan penurunan kualitas logam akibat reaksi elektrokimia antara logam dengan lingkungannya. Oleh karena itu *monitoring* serta pengendalian korosi sangat penting untuk dilakukan, guna mencegah terjadinya korosi dan berkurangnya sisa umur pakai pipa.

Penelitian korosi ini dilakukan pada pipa produksi *naphtha oil* dari *oxygen stripper receiver* 31-V-101 ke *oxygen stripper overhead pump* 31-P-102A/B sepanjang 30 meter dengan kondisi pipa berada di atas permukaan tanah (menggunakan penyangga). Penelitian ini bertujuan untuk mengetahui jenis korosi, metoda pengendalian korosi yang diaplikasikan, laju korosi dan sisa umur pakai pipa.

Pada penelitian ini, pengamatan kondisi lingkungan meliputi suhu lingkungan yaitu 22°C – 32°C, kelembaban relatif 70% - 80%, pH tanah 6,5 – 6,7 dan resistivitas tanah 10,2728 – 48,7901 ohm.m. Pengukuran tebal aktual pipa dilakukan dengan menggunakan alat *Ultrasonic Thickness Gauge Panametrics MG 2 DL* pada 35 titik. Berdasarkan data pengurangan ketebalan pipa maka dapat dihitung laju korosi dan sisa umur pakai pipa.

Jenis korosi yang terjadi pada pipa produksi *naphtha oil* dari *oxygen stripper receiver* 31-V-101 ke *oxygen stripper overhead pump* 31-P-102A/B yaitu korosi merata. Metoda pengendalian korosi yang diaplikasikan, yaitu metoda *coating* jenis *three layer coating* dengan *inorganic zinc rich primer (primer coat)* dan *Polyamide Epoxy (Middle and Finish coat)* serta penggunaan inhibitor *Unicor C*. Laju korosi pipa adalah 0,0953 - 0,1307 mm/tahun dan termasuk ke dalam kategori *good* dan *excellent* berdasarkan ketahanan korosi relatif. Sedangkan sisa umur pakai pipa adalah 5,12 - 12,58 tahun, hal ini lebih rendah daripada umur desain pipa yaitu 20 tahun.

*Kata kunci : Pipa, Naphta Oil, Coating, Laju Korosi, Sisa Umur Pakai Pipa*

**DETERMINATION OF CORROSION RATE AND REMAINING SERVICE LIFE IN PIPES PRODUCTION OF NAPHTHA OIL PROCESSING FROM OXYGEN STRIPPER RECEIVER 31-V-101 TO OXYGEN STRIPPER OVERHEAD PUMP 31-P-102 A/B AT PT PERTAMINA (PERSERO) REFINERY UNIT (RU) VI BALONGAN, INDRAMAYU DISTRICT WEST JAVA PROVINCE**

---

**ABSTRACT**

**PT Pertamina (Persero)** is a state-owned company engaged in the oil and gas industry. In its production activities, **PT Pertamina (Persero)** has several refinery units. **Balongan's Refinery Unit (RU) VI** is an oil refinery unit in Indonesia with a capacity of 125 *Million Barrels Stream per Day* (MBSD). In oil and gas production and transportation activities, **Refinery Unit VI Balongan** uses a variety of metal-based equipment, using all pipes. Metal-based pipes are used because they are resistant to high temperatures and pressures. Such equipment in the production and transportation activities of oil and gas can damage in accordance with the passage of time. Damage that results from damage as well as mechanical. Corrosion is a decrease in the quality of metals due to electrochemical reactions between metals and their environment. Because monitoring is also very important to do, in order to prevent corrosion and reduce the remaining life of the pipe.

This corrosion study was carried out on the naphtha oil production pipe from the oxygen stripper receiver 31-V-101 to the oxygen stripper overhead pump 31-P-102A / B along 30 meters with the pipe located above the ground surface (using a buffer). This study aims to determine the type of corrosion and corrosion control methods applied, the rate of corrosion and the remaining service life of the pipe.

In this study, observations of environmental conditions include environmental temperature of 22°C – 32°C, relative humidity of 70% - 80%, soil pH of 6,5–6,7 and soil resistivity of 10,2728 – 48,7901 ohm.m. Measurement of the actual thickness of the pipe is carried out using Ultrasonic Thickness Gauge Panametrics MG 2 DL at 35 points. Based on the pipe thickness reduction data, the corrosion rate and the remaining service life of the pipe can be calculated.

The type of corrosion that occurs in the naphtha oil production pipe from the oxygen stripper receiver 31-V-101 to the oxygen stripper overhead pump 31-P-102A / B is uniform corrosion. Corrosion control methods applied, namely the three layer coating method with inorganic zinc rich primer and Polyamide Epoxy (Middle and Finish coat) and the use of Unicor C. inhibitors The corrosion rate of the pipe is 0.0953 - 0.1307 mm / years and is included in the good and excellent category based on relative corrosion resistance. While the remaining service life of the pipe is 5.12 - 12.58 years, this is lower than the design life of the pipe which is 20 years.

*Keywords :Pipe, Naphta Oil, Coating, Corrosion Rate, Remaining Service Life Pipe*