

ABSTRAK

Sampah, terutama plastik, menjadi masalah lingkungan kritis di Kota Samarinda karena meningkatnya volume sampah dan minimnya sistem pengelolaan yang efektif. Penelitian ini merancang pusat pengolahan sampah plastik yang berfungsi meliputi pengumpulan, pemilahan, dan daur ulang, dengan penerapan pendekatan arsitektur biomimikri. Desain ini bertujuan untuk meningkatkan kesadaran masyarakat akan pengelolaan sampah secara bertanggung jawab, mengurangi pencemaran, dan mendukung pelestarian lingkungan. Perancangan pusat pengolahan sampah ini dilatarbelakangi oleh meningkatnya jumlah timbulan sampah di Kota Samarinda yang mencapai rata-rata 2.305,50 m³ per hari (2020–2024). Data tersebut kemudian dijadikan dasar proyeksi kebutuhan ruang pengolahan hingga 30 tahun mendatang dengan mempertimbangkan 17% kapasitas pengolahan harian. Perancangan mengacu pada konsep arsitektur berwawasan lingkungan dengan penerapan prinsip efisiensi ruang, sirkulasi aman bagi pengunjung, serta integrasi zona edukasi.

Fasilitas utama yang dirancang meliputi area pengolahan (bangunan sortir, biodigester, serta workshop daur ulang), area penunjang, area pengelola dan pengunjung, serta fasilitas servis. Total kebutuhan ruang yang dihasilkan sebesar ±7.979 m², yang kemudian ditempatkan dalam site plan seluas 39.897 m². Dengan demikian, perancangan ini diharapkan mampu menjawab kebutuhan pengelolaan sampah secara terpadu sekaligus memberikan fungsi tambahan berupa sarana edukasi lingkungan bagi masyarakat.

Dengan memanfaatkan prinsip alam biomimikri dalam desain, bangunan diharapkan tidak hanya berfungsi sebagai fasilitas pengolahan, tetapi juga sebagai media edukasi publik yang berkontribusi terhadap pengurangan dampak negatif pengelolaan sampah di Samarinda.

KATA KUNCI: Pengolahan Sampah, Sampah Plastik, Biomimikri, Edukasi, Samarinda+

ABSTRACT

Waste, especially plastic, has become a critical environmental issue in Samarinda City due to increasing waste volumes and a lack of effective management systems. This study designs a plastic waste processing center that functions to collect, sort, and recycle waste, applying a biomimicry architectural approach. The design aims to raise public awareness of responsible waste management, reduce pollution, and support environmental conservation. By incorporating natural principles into the design, the building is expected to serve not only as a processing facility but also as a public education medium contributing to the reduction of negative impacts from waste management in Samarinda.

The design of this waste processing center is based on the increasing volume of waste generation in Samarinda City, which reached an average of 2,305.50 m³ per day (2020–2024). This data was used as the basis for projecting space requirements for the next 30 years, considering 17% of daily processing capacity. The design applies environmentally conscious architectural principles, focusing on space efficiency, safe circulation for visitors, and the integration of educational and recreational zones.

The main facilities consist of a processing area (sorting building, biodigester, and recycling workshops), supporting facilities, management and visitor areas, as well as service facilities. The total space requirement is approximately 7,979 m², allocated within a site area of 39,897 m². Thus, the design is expected to meet the demand for integrated waste management while providing an additional role as an educational and environmental recreation facility for the community.

KEYWORDS: *Waste Management, Plastic Waste, Biomimicry, Education, Samarinda*