

## Pengembangan pintu air irigasi GFRP (Glass Fiber reinforced plastic) { The development of GFRP (glass fiber reinforced plastic) irrigation water gate }

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=132969&lokasi=lokal>

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### Abstrak

Most of the existing water gates in Indonesia was made of iron or/and wood. Both materials are relatively easy to rusted , damaged or decayed and also attractive to be stolen. Alternative material and design was needed to overcome this issues. This study aim to design water gates using alternative material rather than iron.i.e GFRP (Glass Fiber Reinforced Plastics). This material has several advantages compared to the other material [such as metal] especially its weight, strength and price. The gate in this study was designed for width of 50 cm and 120 cm. Estimated optimal thickness for these width respectively 12 and 30 mm. Mechanical strength testings were conducted according to the Japanese Industrial standard for flexural strength. Testing conducted on two types of samples that have different thicknesses, i.e 12 mm and 30 mm. The average density of sample was 1,5 gr/cm, sample with 12 mm and 30 mm thickness reach flexural strength respectively about 200 kg/cm and 299 kg/cm at 10 mm strain. This result comply mechanical strength requirement for water gate. Thus, recommended thickness for GFRP water gate was thicker than estimated,i.e was 10 mm for width of 50 am and 20 mm for width of 120 cm. The GFRP water gate with round shape in the bottom has contraction coefcient (c)= 0,951 and a value of dischage coefcient (c) can be determined by  $C=C \{h-w\}$ ; with  $k_0 =15$  and  $K_1=0,062$