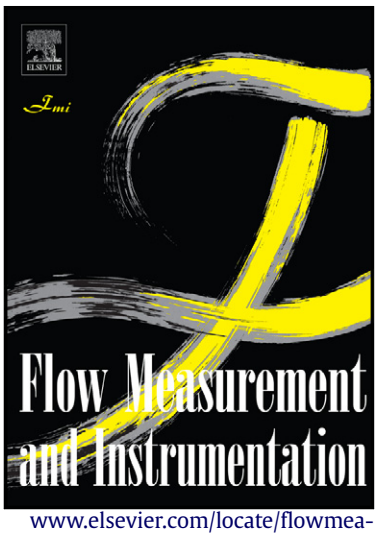

Semi-regular polygon as the best Hydraulic section in practice (Generalized solutions)

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Semi-regular polygon as the best hydraulic section in practice (Generalized solutions)

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Abstract. The best hydraulic section is usually used as a guide or starting point in open channel design. The semi-circle and semi-regular polygons such as semi-square, semi-hexagon and semi-octagon have the minimum wetted perimeter for a given area, and consequently are the best hydraulic sections from the hydraulic point of view.

This study introduces two types (Type I and Type II) of semi-regular polygons as the best hydraulic sections. Both of the sections have the same wetted perimeter and area and thus are equally efficient. However, Type I semi-regular polygon with flat bottom is suitable when excavation depths are shallow, and Type II semi-regular polygon with angled bottom is used when deeper cuts are needed. In this research, general solutions of the normal depth are also presented for Type I and Type II semi-regular polygon sections.

Keywords: Channel design; best hydraulic section; regular polygon; normal depth; general solutions.