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AUTHOR:

⑧ Klepaczko, Janusz

TITLE:

⑥ Influence of the width of the strip subject to cylindrical bending, on the bending moment in the plastic state

PERIODICAL:

⑮ TRANS. FROM.
Rozprawy inżynierskie, v. 10; no. 3, 1962, pp. 543-562

TEXT:

Rectangular profiles are considered and bending processes are represented by surfaces in the $(M/W, g/2\rho, b/g)$ coordinates where M = bending moment, W = transverse cross-section index, g = thickness of the strip, b = its width, ρ = radius of the middle layer. The above coordinate system makes possible the comparison of bending curves for strips of various widths and thicknesses. The deformation of the cross-section of the strip is investigated for large and small values of b/g . Analyzing the influence of the strip width on the bending moment per unit width the author found the maximum values of $(b/g)_0$ above which the bending moment per unit width remains constant. For mild steel and brass the values of

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Influence of the width ...

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$(b/g)_0$ were ~ 20 and 10 respectively, and the corresponding curves are called the bending curves for the strip of infinite width. Finally, assuming a power stress-strain relation, incompressibility and the condition of the plane strain, the author derives a graphical-analytical method of computation of the bending curve of the strip of infinite width, with hardening. For large curvatures M can be plotted versus $1/\rho$ by this method, which has been verified experimentally for brass, the error not exceeding $\sim 6\%$. There are 18 figures and 1 table.

ASSOCIATION:

Zakład Mechaniki Ośrodków Ciągłych IPPT PAN (Department of Mechanics of Continuous Media, IPPT PAS)

SUBMITTED:

January 10, 1962

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