Design of steel I section beam

According to **Eurocode**: EN 1993-1-1

Dimensions

Section type - **IPN 550**

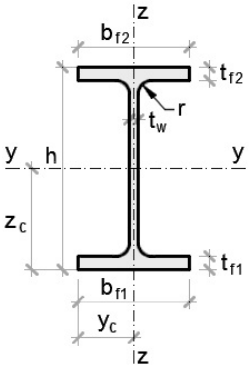
$h = 550$ mm, $t_w = 19$ mm

$b_{f1} = 200$ mm, $t_{f1} = 30$ mm

$b_{f2} = 200$ mm, $t_{f2} = 30$ mm

$r = 19$ mm,

$h_w = h - t_{f1} - t_{f2} = 550 - 30 - 30 = 490$ mm



Section type - Rolled

Steel properties

Yield strength - $f_y = 235$ MPa

Tensile strength - $f_u = 360$ MPa

Modulus of elasticity - $E = 210000$ MPa

Private factors of safety:

$\gamma_{M0} = 1.05$, $\gamma_{M2} = 1.25$

Section properties

$A = 21619.88505$ mm^2	$y_c = 100$ mm	$z_c = 275$ mm	
$I_y = 1016343525$ mm^4	$r_y = 216.81712$ mm	$W_{el\_y} = 3695794.637$ mm^3	$W_{pl\_y} = 4335081.688$ mm^3
$I_z = 40342545.43$ mm^4	$r_z = 43.197136$ mm	$W_{el\_z} = 403425.4543$ mm^3	$W_{pl\_z} = 648481.5573$ mm^3
$I_t = 5216559.421$ mm^4	$I_w = 2704000000000$ mm^6	$W_t = 98566.08232$ mm^3	

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