

## AQUILA TONANTE

Physical quantities	
Total height of the attraction	5,80 m
Maximum height of the seats	5,00 m
Initial height	≈0,50 m
Radius of the attraction	4,15 m
Total weight	(200 ± 50) Kg

$$U_i \text{ ( estimate height of approximately 0,5m)} = 9,8 \times 0,5 \times 200 = 980 \text{ J}$$

$$U_{\max} = 9,8 \times 200 \times 5 = 9800 \text{ J}$$

$$E_{\text{cin}} = 0,5 \times 200 \times (10,20)^2 = 10404 \text{ J}$$

$$\text{Energy mecchanical} = 10404 + 9800 = 20204 \text{ J}$$

$$\text{Tangential velocity: } v_t = 2\pi r / t = 2\pi * 4,15 \text{ m} / 3,57 \text{ s} = 7,30 \text{ m/s}$$

$$a_c = v^2 / r = w^2 r = (10,21 \text{ m/s})^2 / 4,15 \text{ m} = 25,12 \text{ m/s}^2$$

$$F_c = m * a_c = 200 \text{ Kg} * 25,12 \text{ m/s}^2 = 5024 \text{ N}$$

$$F_p = m * g = 200 \text{ Kg} * 9,81 \text{ N/Kg} = 1962 \text{ N}$$

$$T = \sqrt{F_c^2 + F_p^2} = \sqrt{(5024^2 + 1962^2)} \text{ N} = 5393,52 \text{ N}$$