

Catenary Cable Tension

Nonlinear Dinamic Response 3D Test File

| | | | |
|---------------------------------|----|-------------|-------|
| Density | | 8.000 | Kg/m3 |
| Young Modulus | | 1,00E+09 | Pa |
| Length Chain | ok | 6.114,84 | mm |
| Initial Spam | | 6,0 | m |
| Section | a | 2,0 | mm |
| | b | 32,0 | mm |
| Area | | 64,0 | mm2 |
| Final Spam | | 3 | m |
| Mass | ok | 3.130,80 | gram |
| Volume | ok | 391.349,57 | mm3 |
| Total Mass From MecWAY | | 3.130,797 | gram |
| Chain Length from Mecway Mass | | 6.114,84 | mm |
| Total VOLUME From MecWAY | | 391.349,567 | mm3 |
| Chain Length from Mecway Volume | | 6.114,84 | |

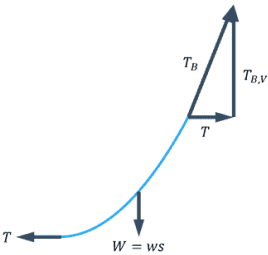
NODE 6 HORIZONTAL TENSION THEORETICAL VALUE

| | | | |
|--|----|-------|-----|
| W is the weight of the cable per unit length | W | 5,018 | N/m |
| y ₀ is the height of the lowest point of the cable measured from some reference | Y0 | 0 | m |
| x and y are points that the cable passes through measured from that same reference. | Y | 2,453 | m |
| x and y are points that the cable passes through measured from that same reference. | X | 1,500 | m |

Outputs Objective

T is the horizontal component of tension Result

Equation

$$y = \frac{T}{w} \cosh\left(\frac{w}{T} x\right) + y_0 - \frac{T}{w}$$
$$0 = \frac{T}{w} \cosh\left(\frac{w}{T} x\right) + y_0 - \frac{T}{w} - y$$


| | |
|---|--------|
| | 0,00 |
| T | 3,41 N |
| | 0,00 |

CALCULIX/MECWAY NODE 6 HORIZONTAL TENSION (Still some small Oscillation due to Nonlinear Dynamic Effects)

Axial Force Mean Value Over the last half Second

| |
|--------|
| 3,41 N |
|--------|

