### Chain calculations

#### Conveyor chain calculations

**Chain speed in m/sec (v)**

\[
v = \frac{z \times p \times n}{60,000}
\]

- **v** = chain speed in meters per second
- **z** = number of teeth
- **p** = chain pitch
- **n** = rotations per minute

#### Capacity in m$^3$ per hour (Q)

\[
Q = A \times v \times 3.600 \text{ sec.}
\]

- **Q** = capacity in m$^3$ per hour
- **A** = trough width \( \times \) layer height in m$^2$
- **v** = chain speed in meters per second

#### Material weight on the chain in kg (mass$_1$)

\[
\text{Mass}_1 = \text{tons per hour} \times \text{distance in meters} \times \frac{v \times 3.6}{\text{v} \times 3.6}
\]

- **Mass$_1$** = material weight on the chain in kg
- **v** = chain speed in meters per second

#### Power in Kw (P)

\[
P = \frac{(v \times \text{mass}_1 \times \mu_1 + \text{mass}_2 \times \mu_2) \times 9.81}{1.000}
\]

- **P** = power in Kw
- **v** = chain speed in m per sec
- **mass$_1$** = material weight on the chain in kg
- **\(\mu_1\)** = friction between steel and the product (for a smooth-running product ca. 1.15)
- **mass$_2$** = total chain weight in kg
- **\(\mu_2\)** = friction between the steel bottom and the chain (for steel pushers approx. 0.25 and for plastic pushers approx. 0.15)

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