Splicer

A machine with two (or more) unwind rolls of material. As one roll expires, the other is "spliced" to the end of the first, to provide a continuous web of material to the process. Splicers are referred to as "zero-speed" if the splice occurs when the new roll is stopped, with paper feeding from a festoon storage system. A 'flying splicer" is one where the new roll is accelerated to line speed before splicing the roll, and roll feed is continuous.

Taper Tension

Constantly decreasing tension on winders to help eliminate telescoping and core crushing.

Tensile Strength

The force, parallel to the plane of the specimen, required to break a given length and width of material.

Tension

The tautness in a web of paper or material. The press or process produces a "pull-through" effect, which is countered by the unwind brake. Each material has an optimum tautness, or tension, and it is the job of the tension system to maintain this tension.

Torque

The braking force which holds the unwind roll from unwinding. Usually referred to in pound-feet or pound-inches of torque produced by the brake.

Transducer

A device that changes one type of signal into another. In tensioning, the most common types are electric-to-pneumatic transducers, and force transducers. See Force Transducer.

Web

A continuous strand of material coming from the roll in its full width. It remains in web form until 'terminated" by a sheeter, die-cutter or other device.

Web Break Detectors

Sensing devices that monitor the web and signal a shutdown or E-stop if a web break occurs. This is a good photoelectric application.

Web Draw

Tension or tautness induced in the web by the pulling action of the printing press or process, resulting in web movement in that direction.

Wrap Angle

Refers to the wrap of the web around a roller, especially a dancer roller. Expressed as "degrees of contact" with the roller.

Conversion Factors

Millimeters x 0.03937 = inches
Inches x 25.4 = millimeters

Centimeters x 0.3937 = inches
Inches x 2.54 = centimeters

Meters/minute x 3.280 = feet/minute
Feet/minute x 0.3048 = meters/minute

Kilograms x 2.205 = pounds
Pounds x 0.4536 = kilograms

Newtons x 0.22482 = pounds
Pounds x 4.448 = Newtons

Watts x 0.001341 = horsepower
Horsepower x 746 = watts

Kilogram-meter^2 x 23.753 = pound-feet^2
Pound-feet^2 x 0.0421 = kilogram-meter^2

Newton-meter x 0.722 = pound-feet
Pound-feet x 1.385 = Newton-meter

Grams/meter^2 x 0.613495 = pounds (basis weight)
Pounds (basis weight) x 1.630 = grams/meter^2

$$\text{Lineal feet} = \frac{36{,}000 \times \text{roll weight}}{\text{roll width} \times \text{basis weight}}$$

$$\text{Approximate roll unwind time} = \frac{\text{lineal feet}}{\text{linear speed}}$$

Effective cylinder force at a given air pressure

$$F_{CYL\,(lbs.)} = P_{PSI} \times \frac{(\text{cylinder piston diameter}) \text{ in (in)}^2 \times \pi}{4}$$

Example: PSI = 30
CYL dia. = 2 in.
$$F = 30 \times \left(\frac{2^2 \times \pi}{4}\right) = 94.2 \text{ lbs.}$$