

## **WEB TENSION CALCULATION**

**PC software for Web Tension calculations**

Applies to:

Software: EEWTCal.080201.0

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## 2) Introduction

### 2.1 Introduction

This document describes the use of the Eilersen Web Tension Calculation software: EEWTCalc.

This software is used to calculate the horizontal and vertical force from a roller with a specified mass. A specified web tension is applied to the roller at adjustable angles. Furthermore the software will calculate a calibration factor used in Eilersen indicators to read out the correct web tension based on the sensor input.

### 2.2 Installation

The software consists of only one .EXE file: EEWTCalc.exe. This file can be copied to any directory desired and executed without any further installation.

### 2.3 Terms

#### **IMPORTANT NOTICE:**

The software is delivered **as is with no warranty**. The use of this software is solely on the risk of the user.

The use of this software for calculation of web tension and calibration factors or selection of sensors is at the **users own risk**.

Eilersen Electric AS assumes no responsibility for any loss or damage resulting from the use of this software.

In order to reduce the risk, please send the input data and the results to Eilersen Electric A/S for review and confirmation.

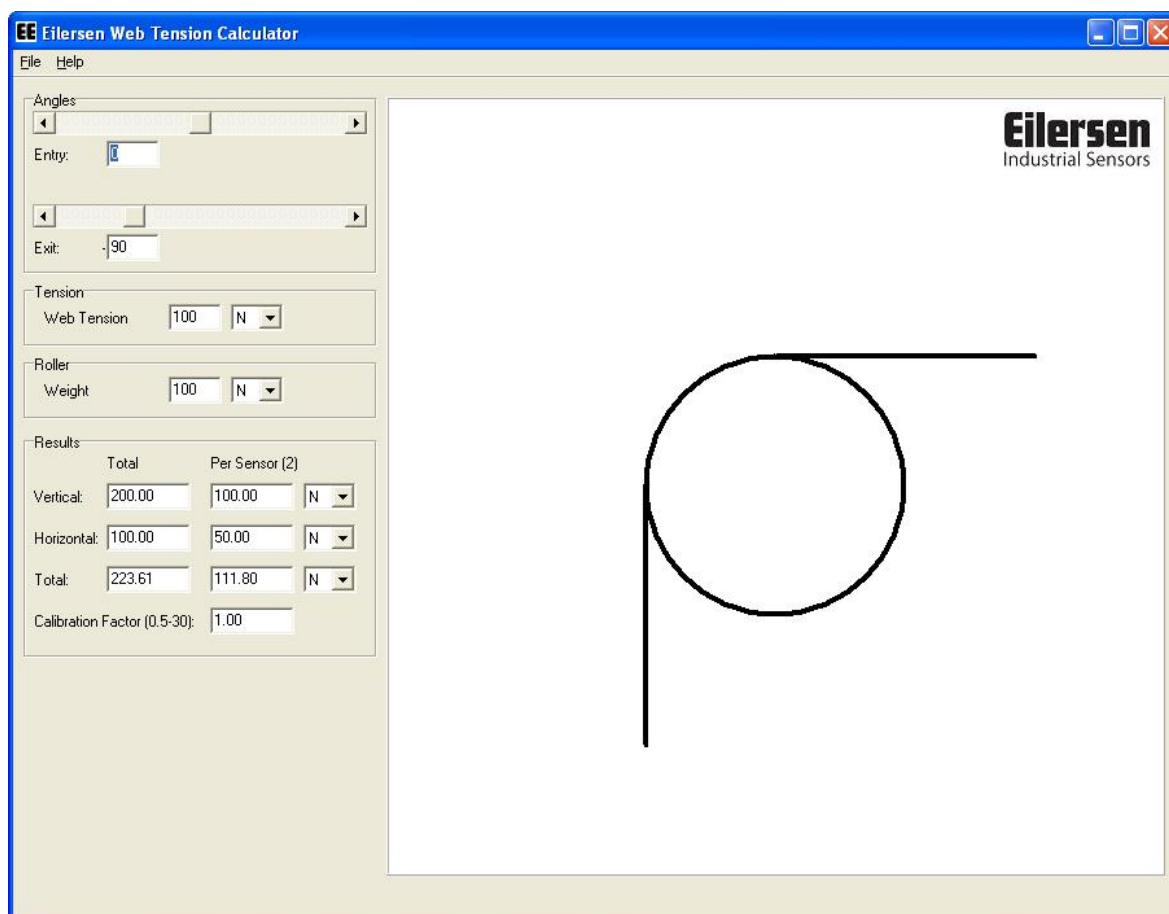
If you do not accept these terms please delete the software immediately.

## 3) Operation

### 3.1 Main screen

Below the main screen is shown.

To the left the adjustable parameters can be set and the results can be read. To the right a visual representation of the system with the roller and the correct angles is shown.



Please notice that the visual represented and the results are not updated until after a new value has been entered by pressing the 'Enter' key or by selecting a new field.

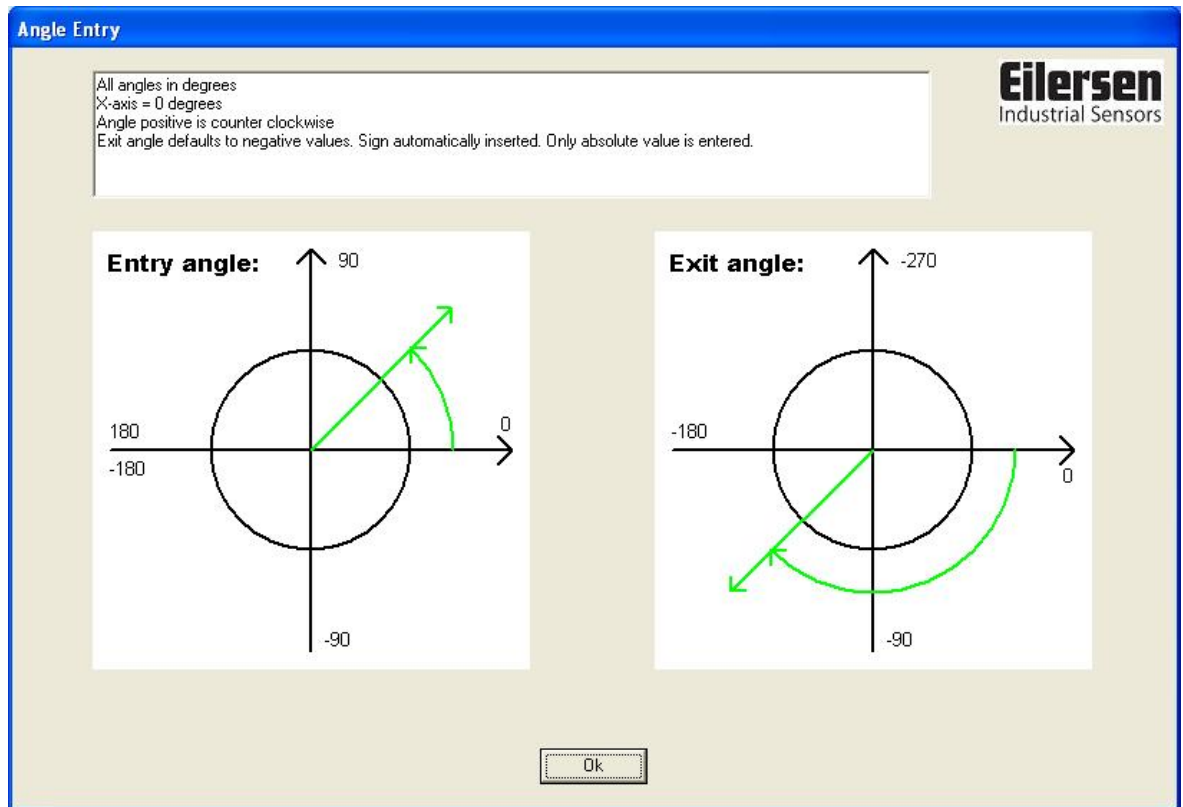
#### 3.1.1 Units

Please notice that all angles are entered in degrees. All forces, including the mass of the roller is presented in Newton.

#### 3.1.2 Angles

All angles are entered in degrees. The entry angle is in the interval  $-180$  to  $+180$  degrees, while the exit angle is interval  $-0$  to  $-360$  degrees. The angles can be entered by the scroll bars or by keying new angles (1 decimal allowed when keyed in). Please notice that when keying in values the visual representation and the results are not updated until after a new value has been entered by pressing the 'Enter' key or by selecting a new field.

Angle orientation: All angles are counted from the X-axis and counter clock-wise as illustrated on the angle explanation page from the software shown below:



The terms *Entry* and *Exit* angle are chosen arbitrarily and can be switch for convenience. **Please be careful** when angles from machine drawings are used. They **must** be recalculated to fit the above definitions before used in the software.

### 3.1.3 Tension and roller weight

Web tension and the mass of the roller are entered in Newton. If the roller weight is present in SI units (e.g. kg) please be sure to recalculate the mass to Newton before using the value in this software. Then web tension to be entered is the total maximum tension. If the tension is given as N/m, N/mm or similar be sure to multiply the roller width before entering the value and to use the maximum value given.

Please notice that when keying in values the results are not updated until after a new value has been entered by pressing the 'Enter' key or by selecting a new field.

### 3.1.4 Results

All forces are presented in Newton. The horizontal force is pointing towards the right. If the result is negative the resulting force is to the left. The vertical force is pointing downwards. If the result is negative the resulting force is upward. Please consult Eilersen Electric A/S for details on the allowed force directions for the sensors.

Total force is the magnitude of the total force.

All forces are calculated as system total and per sensor when two sensors are installed as will normally be the case.

The Calibration Factor is the factor to be entered in Eilersen indicators to give the correct reading of the web tension based on the sensor output.

The use of this software for calculation of web tension and calibration factors or selection of sensors is at the **users own risk**.

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