

## Comparing tensile forces with IMP-TENS measuring system

### IMP-TENS System

The IMP-TENS system is a mobile measuring and analysis programme to compare tensile forces of threads or wires in rotating systems.

A new type of measuring method enables first time measuring and monitoring tensile forces of all threads / wires in braiding and stranding machines by using only one sensor.

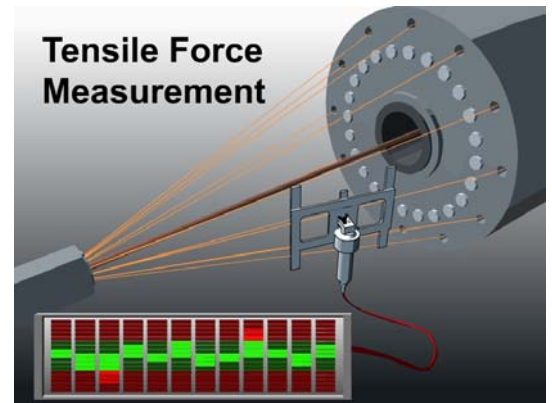
Tensile force of every single thread or wire is measured and displayed during a machine rotation.

The easy installation effects short backfitting time.

The system is working computer-aided.

So the quality of stranding is assured by monitoring the constant tensile forces of all wires.

Measurements are clearly represented on visual display unit. Measuring data are available as numerical value and graphical representation.

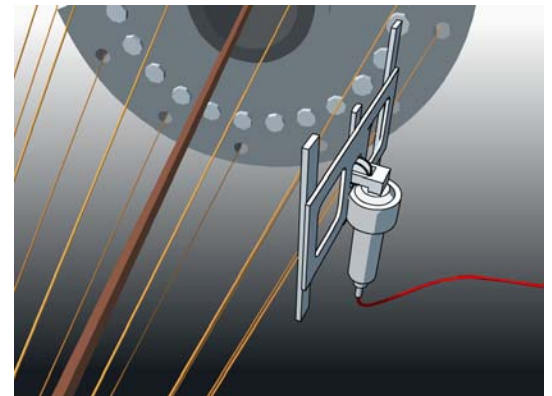


### Principle of tensile force measuring with IMP-TENS system

The tensile force measurement is based on defined deflection of material to be measured from the straight running direction.

The force which is applied to this deflection is being measured. In order to determine the tensile force of the material, the angle of deflection must be known. This principle is generally called "3 roller system". It is the basis of many tensile forces measuring systems.

According to this method it is possible to measure the tensile forces of wires of a rotating stranding machine by a stationary fixed sensor which is located outside.



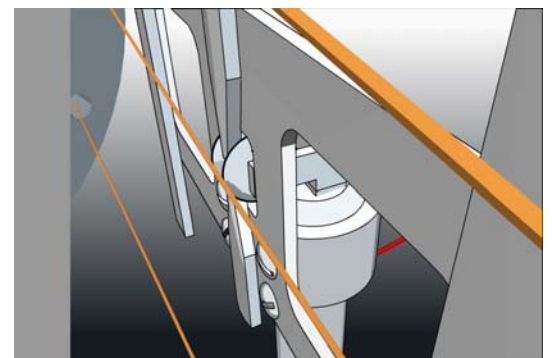
By rotation of the machine every wire will arrive at the sensor which is slightly deflecting the wire from its straight direction.

For a precise measurement a deflection of about  $5^\circ$  will be sufficient, which is equivalent to a wrap angle around the sensor of  $10^\circ$ .

When a wire is reaching the sensor it runs up on a ramp to the measuring peak. At the top level of the ramp which is the measuring skid there is a defined wrap angle existing.

The force on the measuring head is reaching here the maximum.

The connected analysis device identifies this force pulse as measured value.



The mechanical load of the wires during this process is very small.

Furthermore the time of contact by the sensor is very short (in the region of milliseconds), so all possibility of wire damages is nearly excluded.

Contactless operating proximity switches register the machine rotation and identify each single wire.