

## **C.1. General reflections about increase of torque at the rear gear component due to a gearing system at the bottom bracket**

At first glance a mountain-drive increases entry torque at the rear gear component by a factor of 2.5. It's worth to examine this assumption more in detail!

If you climb a certain slope with a certain speed, there is a certain tension on the chain and therefore a given torque entering the rear component.

If you shift down into low gear and you still climb with the same speed, tension on the chain is still the same and the entry torque on the rear component also. The only thing that changed is the frequency of your pedaling and therefore less load on your knees!

This means: there is only an increase in load, if:

- you climb the same slope with higher speed
- you climb a steeper hill with the same speed
- you climb a slope, that you couldn't have climbed without using a mountain-drive.

In this case, load starts to rise slowly when the slope gets steeper.

This is the explanation, why ten thousands of internal hubs are working great in combination with any Schlumpf drive and only very little failures have been reported in all the past 20 years.