

## Kolbenstange aus 42CrMo4 unter 55 kN / Fatigue Advisor / Haigh-Diagramm

$R_m := 1100 \text{ MPa}$

Zugfestigkeit

$\sigma_o := 650 \text{ MPa}$

Oberspannung aus FEM

$R_p := 900 \text{ MPa}$

Streckgrenze

$\sigma_u := -\sigma_o$

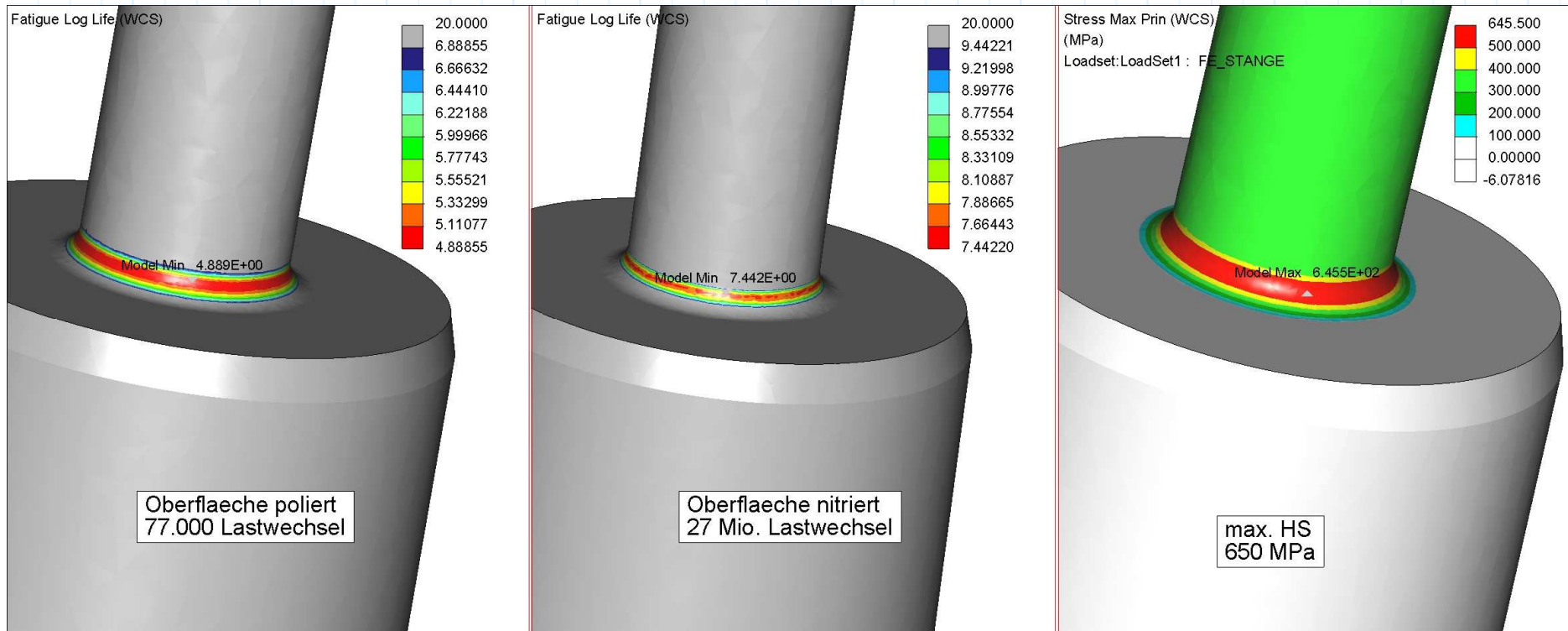
wechselnde Last

$\sigma_{zd\_WN} := 440 \text{ MPa}$

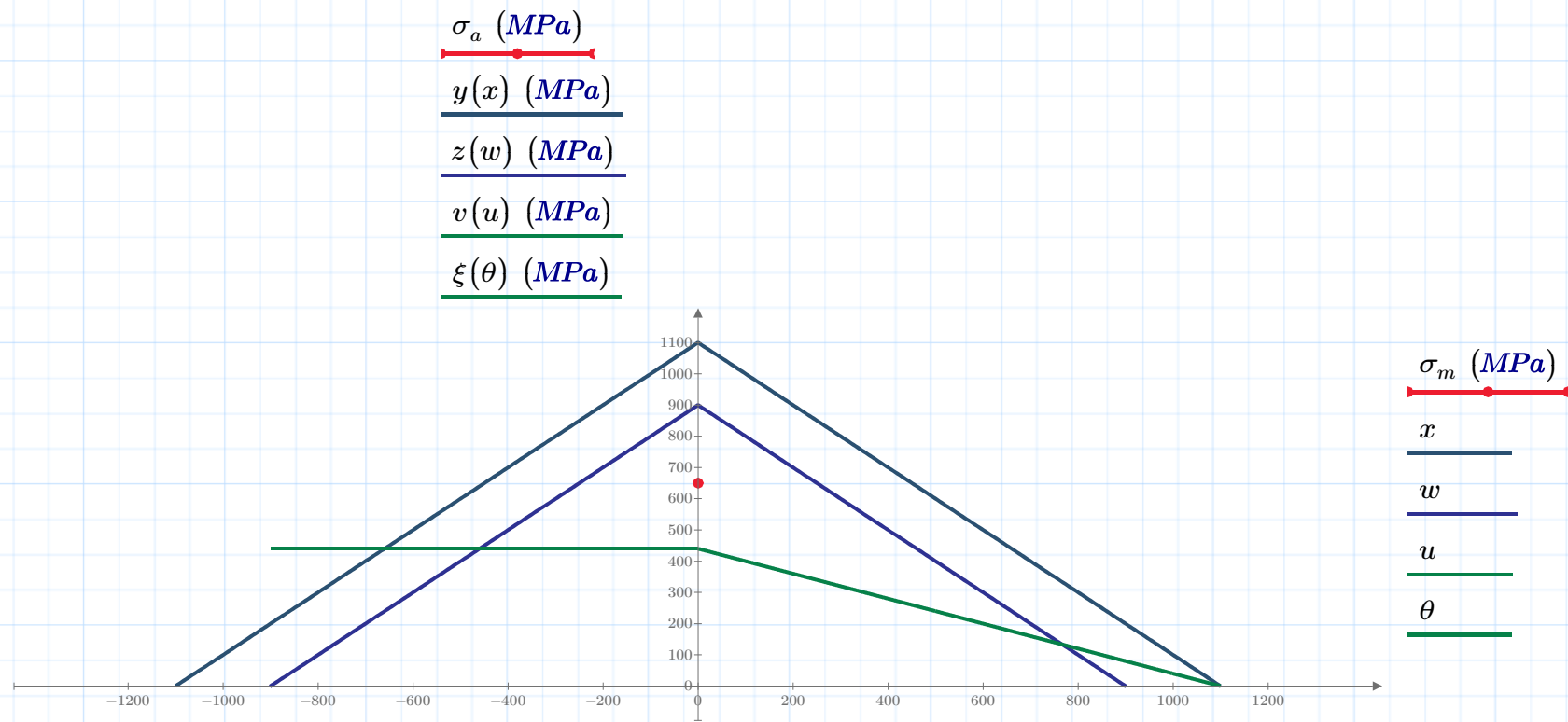
Zug-Druck-Wechselfestigkeit

$\sigma_o = 650 \text{ MPa}$

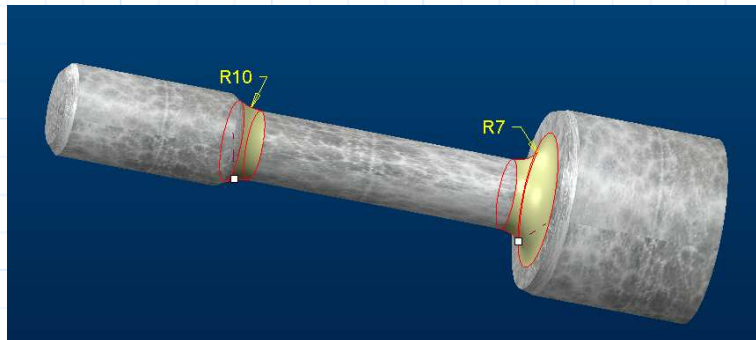
$\sigma_u = -650 \text{ MPa}$



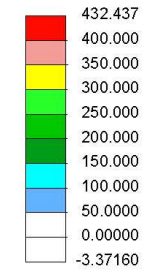
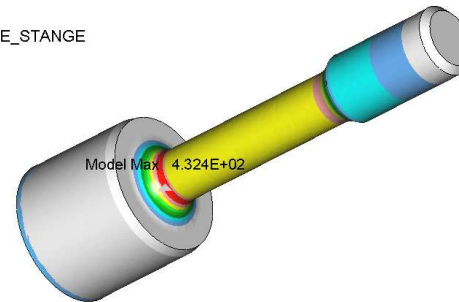
$$\sigma_a := \frac{\sigma_o - \sigma_u}{2} = 650 \text{ MPa} \quad \sigma_m := \frac{\sigma_o + \sigma_u}{2} = 0 \text{ MPa}$$



Das Ergebnis (roter Punkt) liegt **nicht im dauerhaftesten Bereich.**



Stress Max Prin (WCS)  
(MPa)  
Loadset: LoadSet1 : FE\_STANGE



$\sigma_o := 433 \text{ MPa}$

Optimierung in FEM

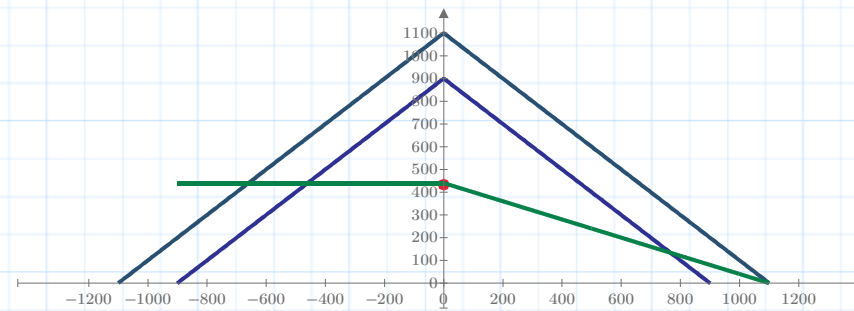
$\sigma_u := -\sigma_o$

$\sigma_a := \frac{\sigma_o - \sigma_u}{2} = 433 \text{ MPa}$

$\sigma_m := \frac{\sigma_o + \sigma_u}{2} = 0 \text{ MPa}$

$\sigma_a$  (MPa)    $y(x)$  (MPa)    $z(w)$  (MPa)    $v(u)$  (MPa)    $\xi(\theta)$  (MPa)

$\sigma_m$  (MPa)



$x$   
 $w$   
 $u$   
 $\theta$

Das Ergebnis (roter Punkt) liegt **im dauerfesten Bereich**.