



Fundamentals of Stress Screening

Fred Schenkelberg

Stress Happens



Causes Failures

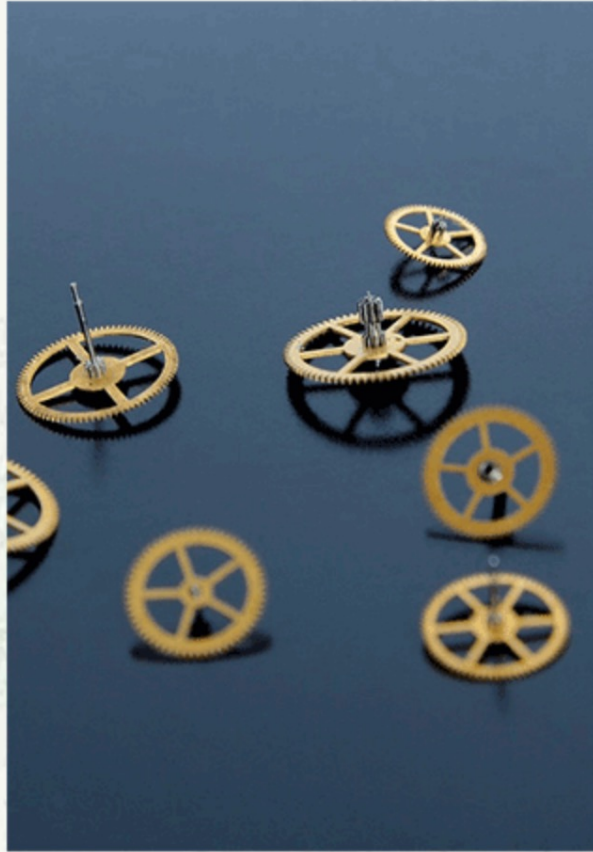


Which is Good



How many ways does
elevated temperature
cause damage?

Purpose of Stress Screening



Accelerate

Specific

Temporary

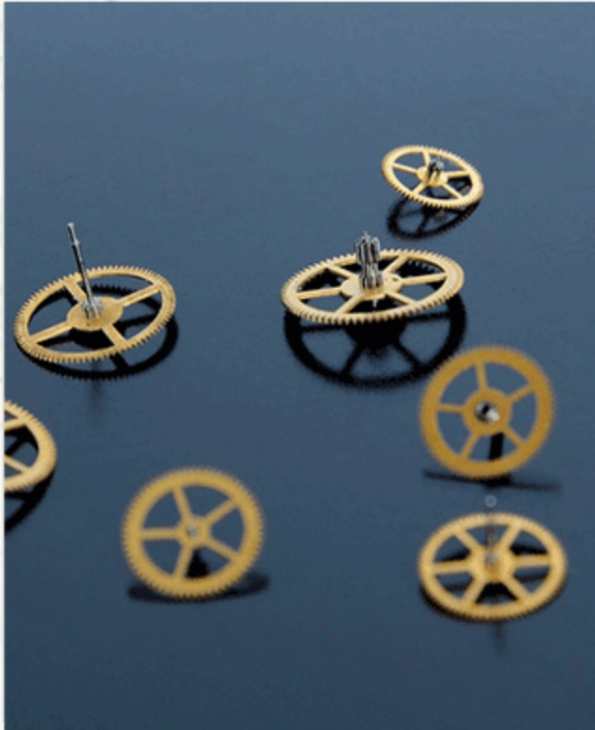
Accelerate



Find faults quickly

This is a trade-off
time for damage

Specific Problem



detectable fault

A subset has the fault,
which we can find

Temporary Fix



Ending the screen is
essential

Screening is expensive

Time consuming

Error prone

Inefficient

How can

stress screening
go wrong?

Problems w/ Stress Screening



Always

Damage

Solutions

“We Always
Do Stress
Screening”



Incur Collateral Damage





Lack of Solutions or Resolution



Where is the best
place

to conduct
a stress screen?

Creating a Stress Screen



Options



Failure
Mechanisms



Stress



Proof

Any Other Option



What else could be done instead of a stress screen?

The best solution is not a stress screen

Failure Mechanisms



Focus on failure
mechanisms not
symptoms

The one you want to find

There may be more than one

What other mechanisms

Applied Stress



Make sure the stress accelerates the mechanisms of interest

Remember the stress will apply to everything, not just your one mechanism

Proof that it Works



How much life does the stress consume of the product?

Run the screen, then determine expected remaining operating life

One method is to run the screen 20 times – no failures suggests the screen consumes less than 5% of life

When do you

stop a stress screen?

Avoiding Stress Screening



SPC



DFR



Vendors

SPC & Process Control



Design for Reliability



Vendor Management



In Summary

Sometimes the right
approach



All screens should end
promptly



Design to be effective



Mind the collateral
damage



More Information

Visit [AccendoReliability.com](https://www.AccendoReliability.com)

Let me know if you have any questions.

Check out the reliability engineering podcast network at [Reliability.FM](https://www.Reliability.FM)

Go out and question then plan to end any currently running stress screens.