

Favuseal.com
Christian Schlytter-Henrichsen
christian@favuseal.com

Metodos 2-Step Process For Faster, Greener And More Economical Qualification And Certification Of PFP Systems

Large-Scale Testing is NECESSARY



Performance Validation: It verifies whether a PFP system performs as intended in real-life fire scenarios. This helps ensure that the materials and systems can withstand fire conditions for a specified duration, maintaining the integrity of structures and preventing fire spread.



Compliance with Standards: Risk Assessment and Safety: Large-scale fire tests assess the fire behavior of materials, providing crucial information about how they contribute to fire safety.



Design Optimization: Results from large-scale fire testing inform designers and engineers, helping them improve the PFP solutions and optimize the fire safety design of commercial assets.



Certification and Market Approval: Passive fire protection products must undergo large-scale fire testing to gain certification, which is essential for their commercial use in projects.

Overall, these large-scale fire tests provide critical insights into the behavior of PFP systems in fire conditions, supporting the development of safer assets.



The FACTS

Hydrocarbon pool fire

+/- 200 kgs of propane burnt

600 kgs of CO₂ released into the atmosphere

JF



High Heat flux Jet fire

+/-1.080 kgs of propane burnt

3.200 kgs of CO₂ released into the atmosphere

HCF



Jet fire

+/-1.080 kgs of propane burnt

3.200 kgs of CO₂ released into the atmosphere



The Traditional Fire Testing Experience?



Expensive



Time
consuming



Complex as many
objects needs to
be tested



The indirect costs



Release massive
amounts of CO2

”

Introducing a **greener** two-step
large-scale fire testing process
with circular results and factual
findings

– Metodos, Norway

FIRESYS: TAC



www.DNV.com



Certificate No:
TAE0004W9

TYPE APPROVAL CERTIFICATE

This is to certify:
That the Fire Protective Systems for Cables

with type designation(s)
Øglænd's passive fire protection system FireSys, Powered by Favuseal®

Issued to
Øglænd System AS
KLEPPE, Norway

is found to comply with
DNV offshore standards

Application :
Approved for use as 250 kW/m2 Jet fire protection of power cables and data cables.

Issued at Høvik on 2024-07-01
This Certificate is valid until 2029-06-30 .
DNV local unit: Stavanger

Approval Engineer: Ivar Bull

for DNV

Frederik Tore Elter
Head of Section



Certificate No:
TAE0004EN

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KLEPPE, Norway

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DNV offshore standards

Application :
Approved for use as Hydrocarbon pool fire protection of power cables and data cables.

Issued at Høvik on 2023-05-16
This Certificate is valid until 2028-05-15 .
DNV local unit: Stavanger

Approval Engineer: Ivar Bull

for DNV

Frederik Tore Elter
Head of Section

EXAMPLE: Traditional Process Of Jet Fire Fire Testing - FIREBOX



Elements needed and process



Testing object: dumb bell - pipe 8"



Passive Fire Protection Solution



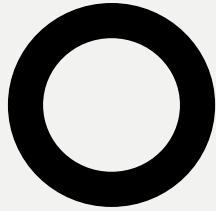
Fire test setup acc. ISO-22899-1



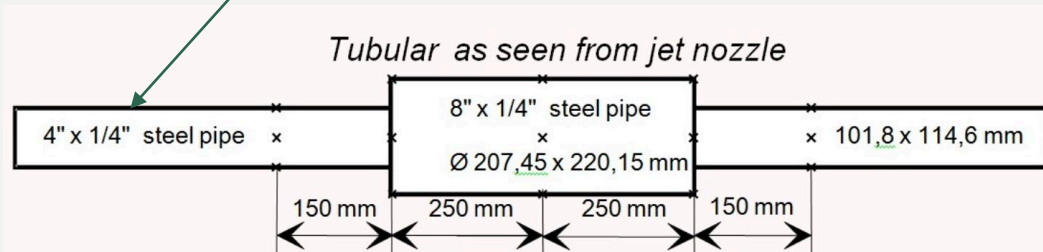
Propane

Traditional Way Of Jet Fire Fire Testing - FIREBOX

A.

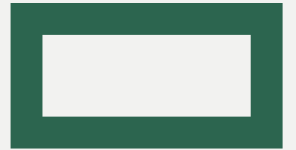


4" steel pipe



8" steel pipe representing
the valve

B.



Physically install the PFP system onto the
object that that requires PFP at fire lab

Traditional Way Of Jet Fire Fire Testing FIREBOX

C.



Burn off 1.080 kgs of
propane in 60 minutes

Traditional process Of Jet Fire Fire Testing - STEEL PIPEWORK



Elements needed and process



Testing object: Steel pipe 6"



Passive Fire Protection Solution



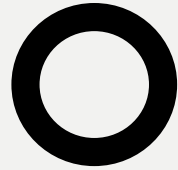
Fire test setup acc. ISO-22899-1



Propane

Traditional Way Of Jet Fire Fire Testing - - STEEL PIPEWORK

A.



Wall thickness:
6,3mm



6" steel pipe

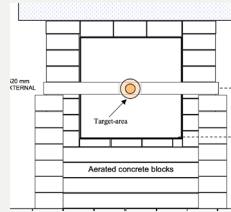
B.



Physically install the PFP system onto the
object that that requires PFP at fire lab

Traditional Way Of Jet Fire Fire Testing – STEEL PIPEWORK

C.



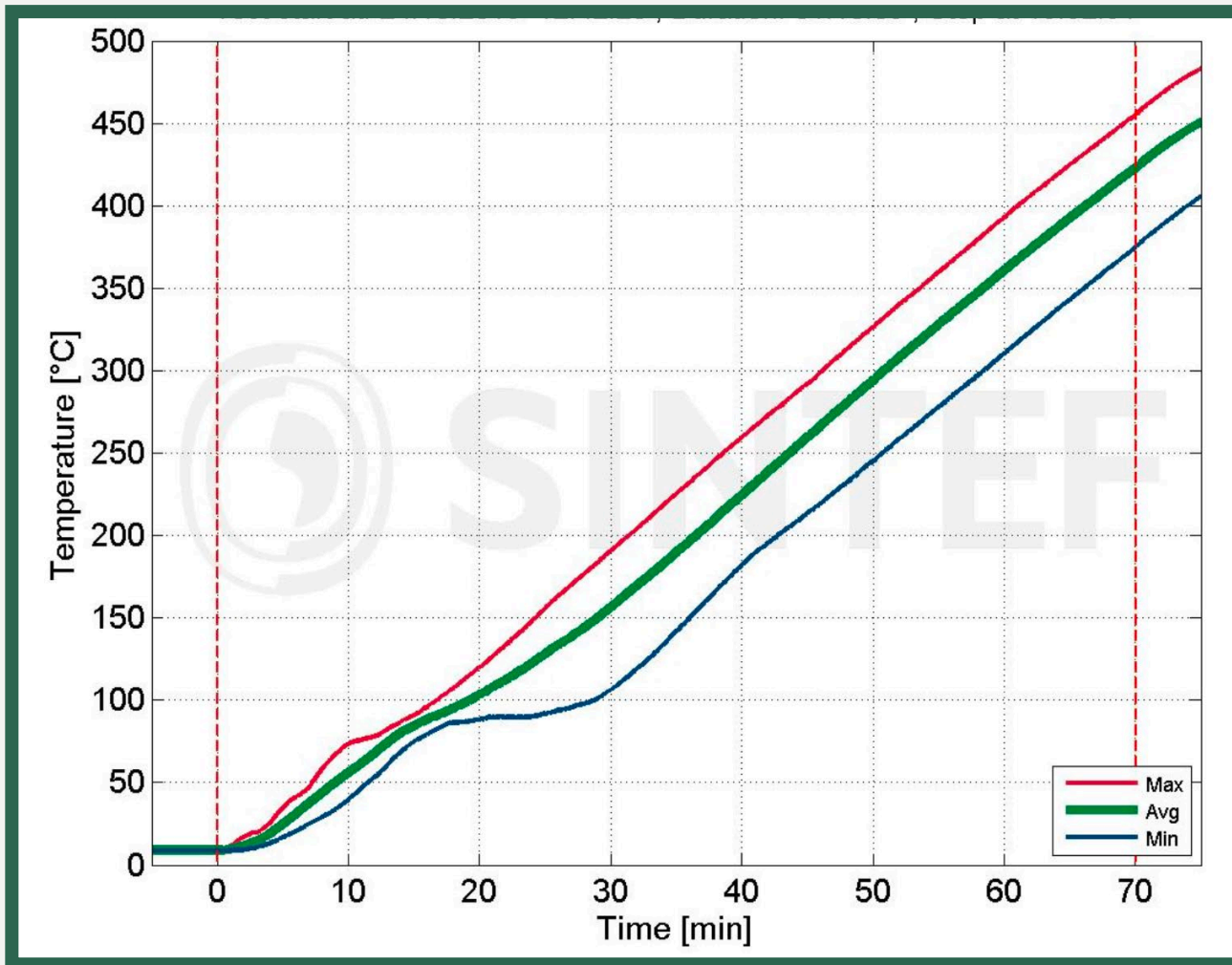
Mount the object with PFP into the furnace

D.



Burn off 1.080 kgs of propane in 60 minutes

Result of Jet fire testing of Pipework and Firebox



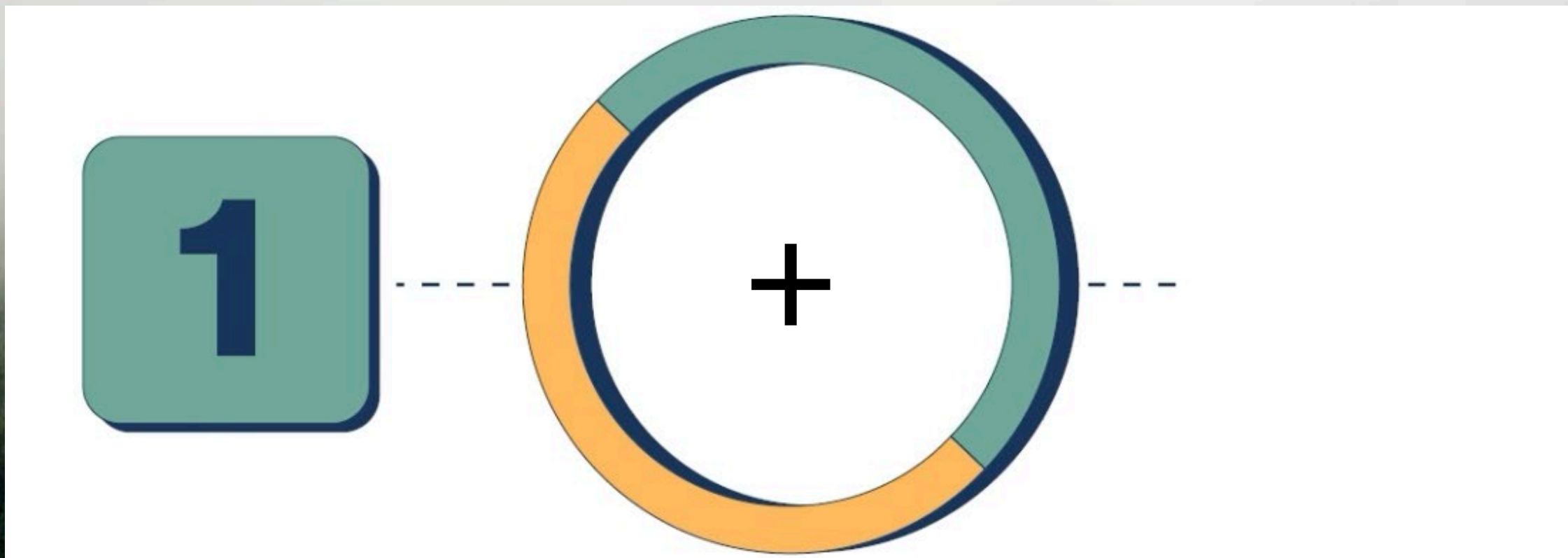
Result!

The PFP results are only valid for the object it was tested on, i.e. a standard /flange represented by a lump of metal or the pipe size and the wall thickness.



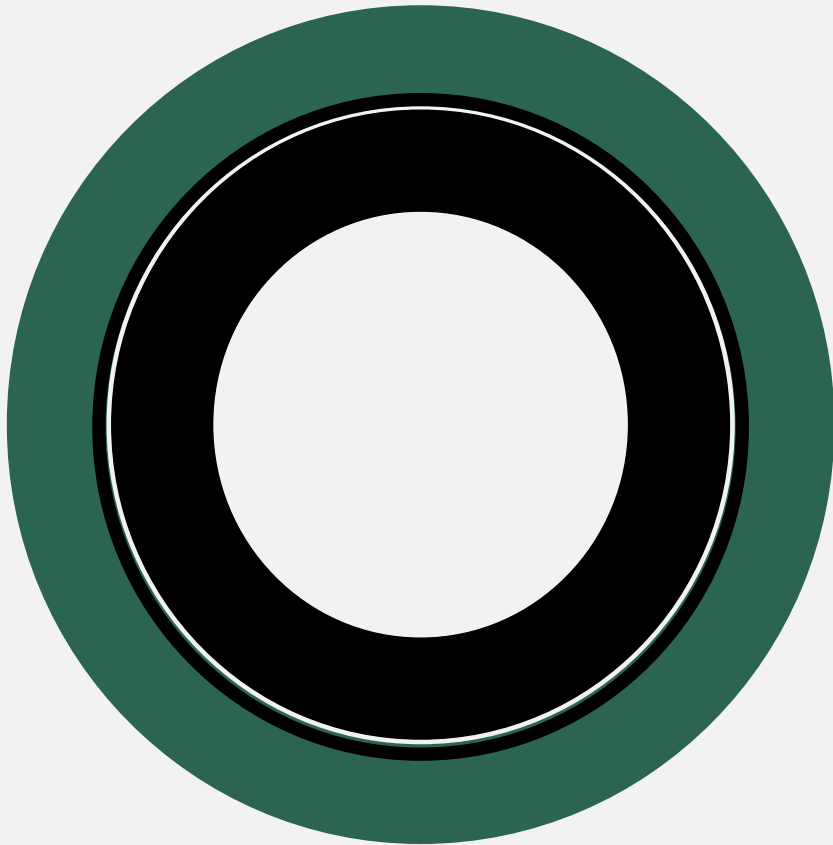
Metodos is a 2-step process

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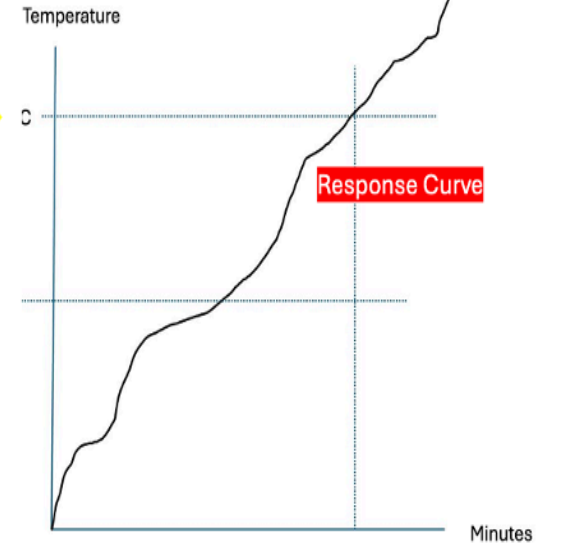
1

STEP 1 - METODOS Process Of Firetesting – PIPEWORK



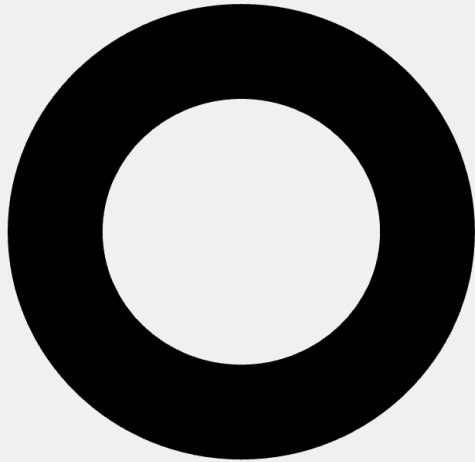
Response Curve

The temperature development inside the empty PFP solution



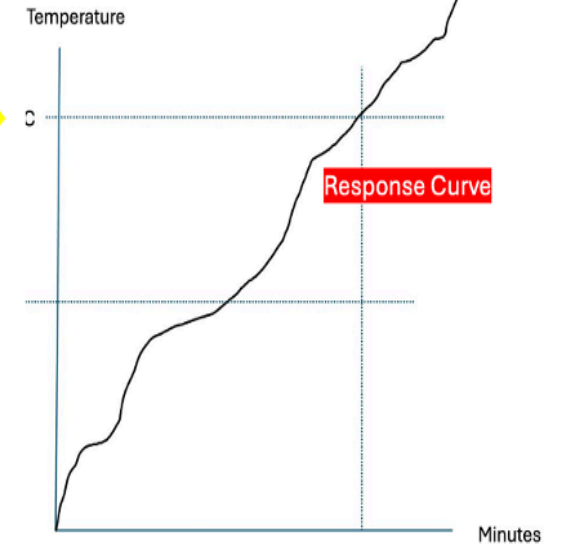
1

STEP 1 - METODOS Process Of Firetesting - FIREBOX



Response Curve

The temperature development inside the empty PFP solution



2

Metodos – STEP 2



A proprietary small furnace which only purpose is to replicate the slope of the RESPONSE CURVE generate in STEP 1



The furnace used renewable electricity to generate the RESPONSE CURVE found in STEP 1



The temperature inside this small furnace is digitally controlled by a computer.



2

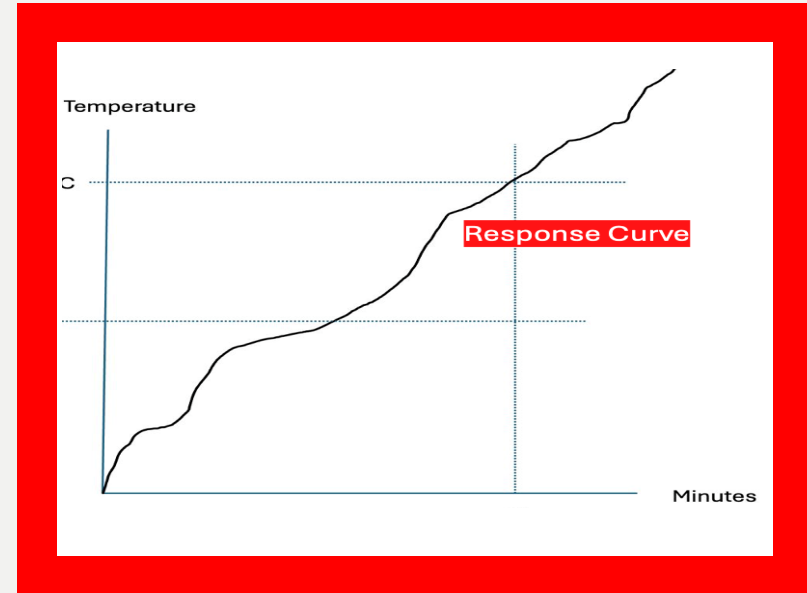
If **NO OBJECTS** are inside of the furnace, the temperature inside the furnace would be **identical** to the response curve



Furnace using renewable electricity



Computer to set up the response curve




The **RED** is the custom-built furnace digitally controlled by a computer


2


STEP 2: Insert the actual objects that requires PFP

Step 2: OBJECT introduced

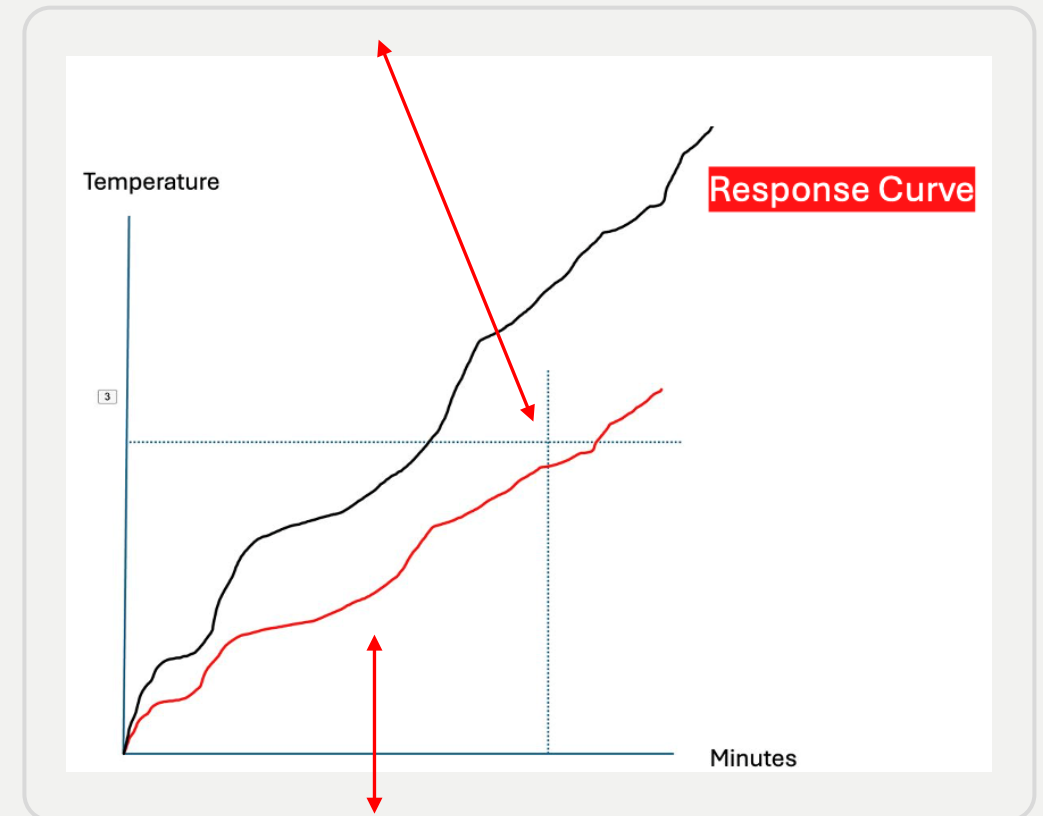


 Furnace using renewable electricity

 Test the object:

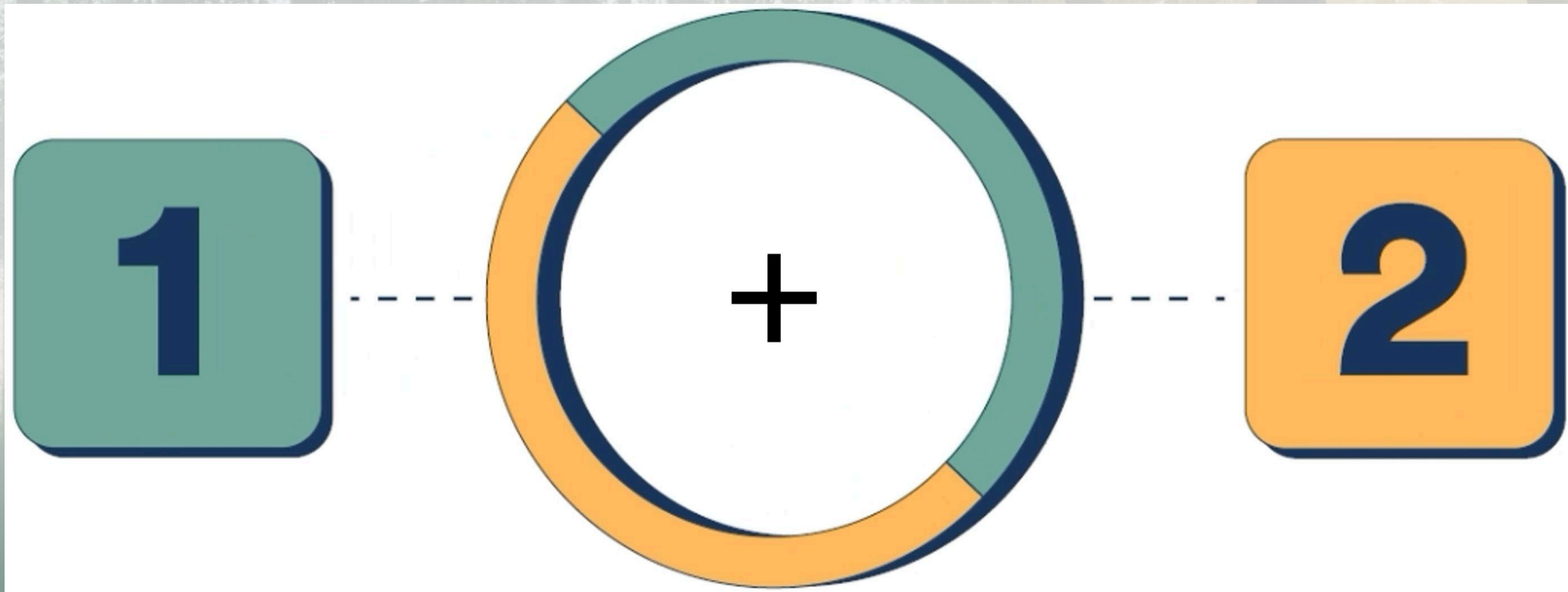
 Computer to set up the replicate response curve

Criteria of Failure








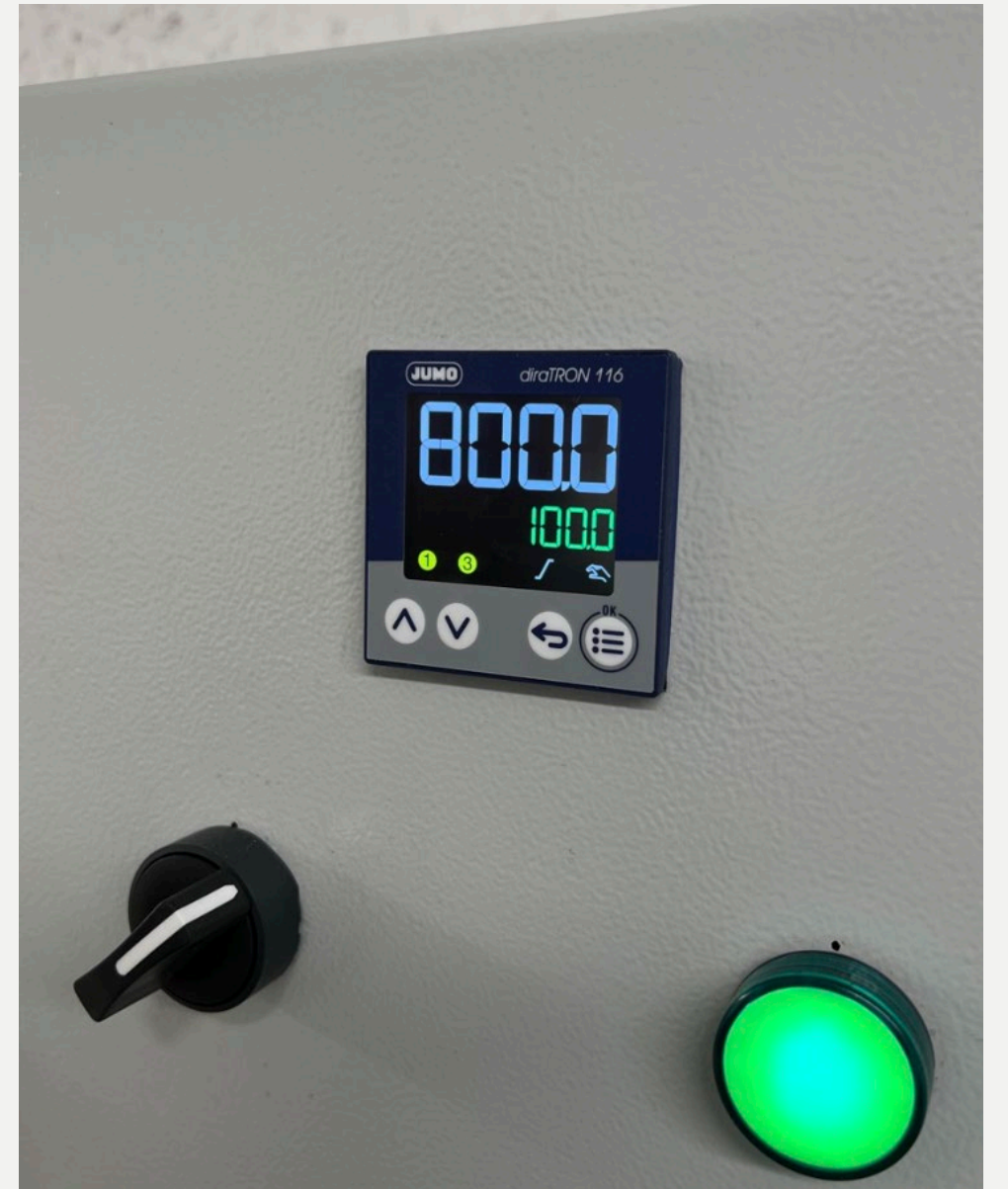
Heat sink effect captured

We are soon done dear PFPNET members!

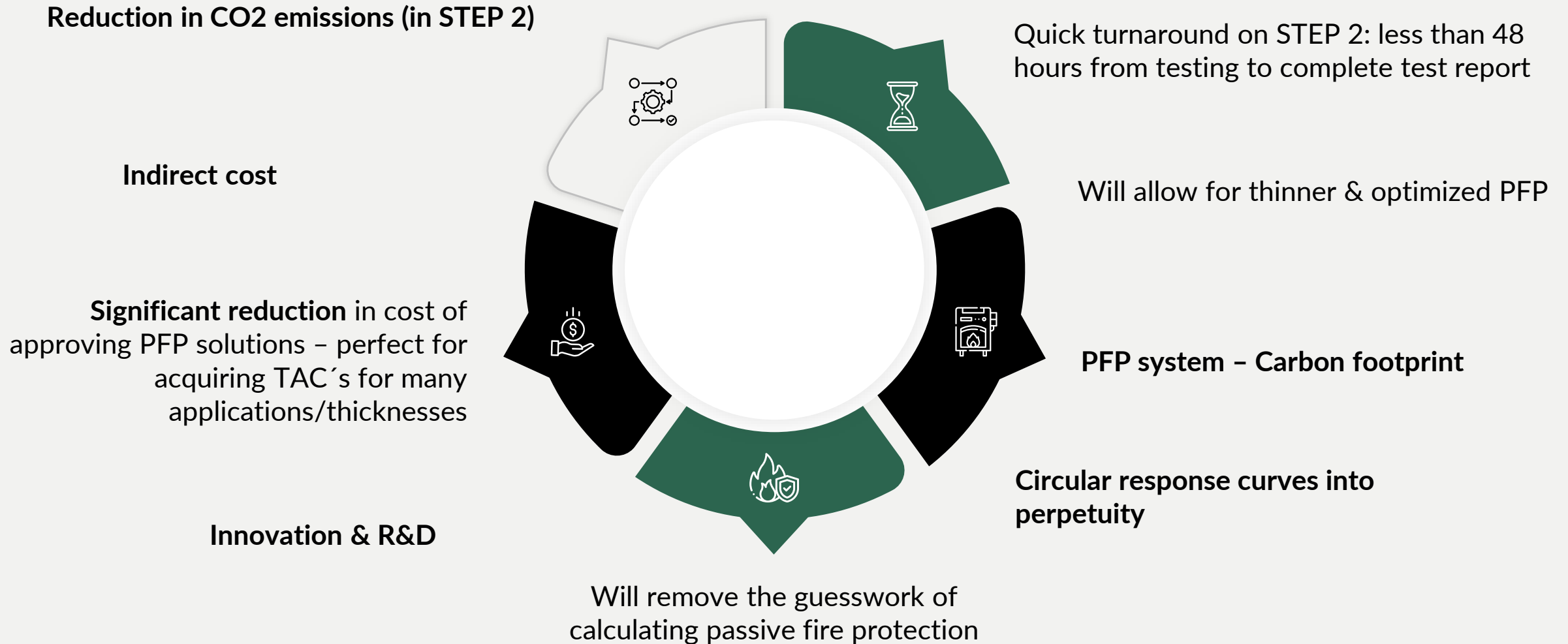


Factual findings & Insight

-  Test the geometry
-  Stagnant – flowing - alloys
-  Critical Core Temperature
-  Low CO2 – Ship item to lab
-  Project specific testing / validation



CONCLUSION: Metodos 2-step process:



Favuseal.com
christian@favuseal.com
www.favuseal.com

METODOS Q & A “...safe travels”