fafe
Failure Analysis & Forensic Engineering

A sea of problems

The explosion of a muffler in a yacht led to its being grounded for 8 months with damages of over 7,000,000 Euros. Thanks to our skilled technical expertise, we found the cause of the breakdown and the solution to the problem

In Brief

The Problem:
The explosion of a muffler in a yacht with damages in excess of 7,000,000 Euros.

The Challenge:
Finding the cause of the damage

The Results:
Cause found: a malfunction in one of the trigger boxes blocked the release of exhaust fumes, causing the explosion.

Thanks to Root Cause Failure Analysis, we can find and solve those 20% of the problems that cause 80% of company losses, improving both the product and the manufacturing process, and, at the same time, lowering the number of defects and in-use failures.

We have carried out dozens of Root Cause Failure Analyses for the most varied industries (oil & gas, chemicals, energy, steel, manufacturing, electronics, etc.)

Whoever may harbour any doubts should read about the following Case History concerning the breakdown of a yacht during its maiden voyage, which led to its being grounded for 8 months, suffering damages totalling more than 7,000,000 Euros.

The breakdown was due to the explosion of one of the motor's mufflers, making high temperature combustible gas to leak out, which caused damage to the machine room. Our visual analysis concluded that:

• Extensive deformation in proximity to the fracture and bulging in the centre of the top disk.

The numeric tests and the F.E.M. demonstrated that:

• The pressure inside the mufflers could not, in any way, have caused the explosion.

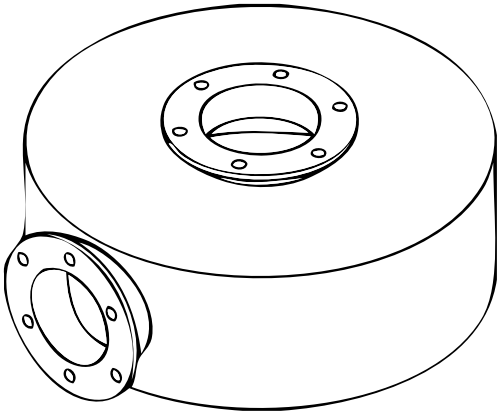
• Even in extreme environments, the pressure remained well below the maximum limit allowed.

The morphology of the damage and the numbers simulations came to the following conclusion:

• The failure was due to a mechanical overload because of elevated pressure.

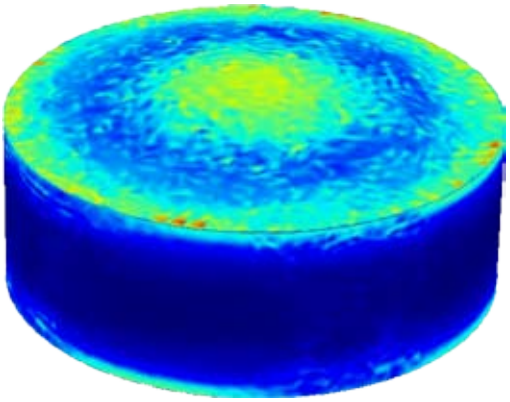
• The elevated pressure inside the mufflers could not be blamed on environmental conditions.

Further testing revealed that a malfunction in the motor's trigger box had blocked the release of exhaust fumes, raising the pressure inside the mufflers, which resulted in the explosion.



Muffler – dimensions

Muffler – the elevated deformation due to muffler explosion is evident



F.E.M. – it is clear that even in extreme environments, the pressure could not have caused the explosion.

Don’t wait for a fracture to happen..solve your problem now!
Call us at 02/23998225 or visit our website at **www.fa-fe.com**

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