PROTEGO® Success Stories

2025

Content

1. PROTEGO France

1.1. Flame Arrester Replacement Shell Bonga FPSO

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Challenges

- 4 Existing Flame Arresters on a FPSO
- Creating too much pressure losses
- Not easy to clean, and cleaning efficiency bad ➔Stop of production every month
- Cleaning request crane to handle the devices and during the cleaning process.
- Due to the long cleaning time process, the job was done on an onshore workshop

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PROTEGO Flame Arrester Replacement

S/N	Basis for comparison	Old Arrestor (Just Before replacement)
1	Frequency of cleaning.	1 month
2	Duration of work required to achieve proper cleaning.	2days
3	Manpower (no. of men involved) in the actual cleaning process	2
4	Materials and Equipment in use for the cleaning	Bath-up for soaking, Metal Brite, Blasting hanger, High pressure jetting machine.
5	Delays in the cleaning process	2 Weeks minimum
6	Efficiency of the cleaning process	Very poor even after been cleaned. (30-40%)
7	Cost of cleaning and logistics	Availability of Supply vessel, Focal person ashore, AGO cost and Port Charges
8	Rigging and lifting operations required.	Same number of personnel (6)
9	Handling/cleaning cost	Required Contract to be set up for onshore cleaning and return.
10	Sparing	No spare arrestor was provided
11	Safety/Risk involved	Transporting from FPSO to PSV possess lifting Hazards (Drop objects, lifting equipment failure, etc.). Same for returning from ashore to Bonga.
12	Weather/ Sea state	Required calm sea as specified in the adverse weather policy for a PSV to come alongside.

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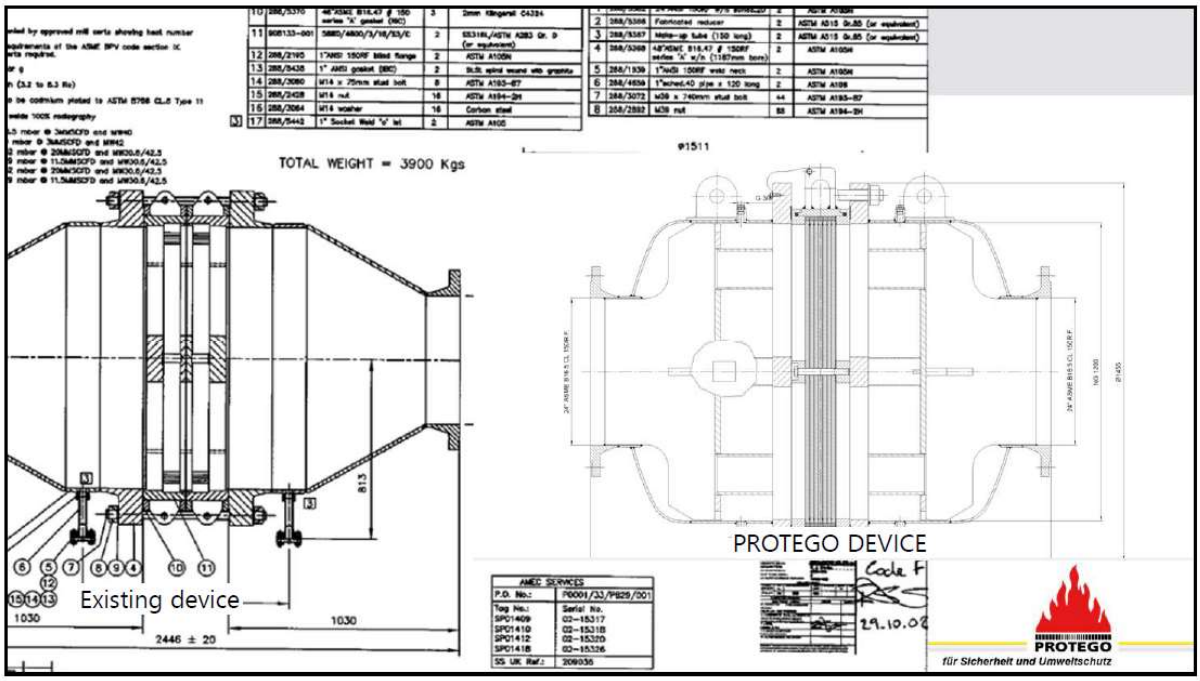

What we offered

- Detonation flame arresters
- easy maintenance= special design to allowed easy maintenance on FPSO
- Tap drain to limit condensation accumulation.
- Dimenssions fitting to the existing device to avoid piping work
- Commissioning on site

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PROTEGO Flame Arrester Replacement

- RESULTS:

S/N	Basis for comparison	Old Arrestor (Just Before replacement)	New Arrestor (PROTEGO)
1	Frequency of cleaning.	1 month	6 months
2	Duration of work required to achieve proper cleaning.	2days	6 hours
3	Manpower (no. of men involved) in the actual cleaning process	2	1
4	Materials and Equipment in use for the cleaning	Bath-up for soaking, Metal Brite, Blasting hanger, High pressure jetting machine.	1 air hose with plant air pressure (6barg)
5	Delays in the cleaning process	2 Weeks minimum	1 day
6	Efficiency of the cleaning process	Very poor even after been cleaned. (30-40%)	Very High (90-95%)
7	Cost of cleaning and logistics	Availability of Supply vessel, Focal person ashore, AGO cost and Port Charges	Cleaning is done on board Bonga
8	Rigging and lifting operations required.	Same number of personnel (6)	Same number of personnel (6)
9	Handling/cleaning cost	Required Contract to be set up for onshore cleaning and return.	Cleaning is done on Board using FPSO core crew.
10	Sparing	No spare arrestor was provided	Availability of one complete spare
11	Safety/Risk involved	Transporting from FPSO to PSV possess lifting Hazards (Drop objects, lifting equipment failure, etc). Same for returning from ashore to Bonga.	No Vessel transfers.
12	Weather/ Sea state	Required calm sea as specified in the adverse weather policy for a PSV to come alongside.	No vessel transfers.

- Better cleaning Frequency
- Better cleaning Efficiency
- Shorter cleaning Duration
- Cleaning service offshore with less manpower and no risk of vessel transfer

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PROJECT TEAM FEEDBACK

Dear Sébastien,

Bonne Année!

Trust you and your team are doing well. Nkechi and I are glad to hear from you and hope we can explore the opportunity to meet whenever you are available in Nigeria on other trips.

On the feedback for the newly installed flame arrestor units, we had waited to monitor the performance over 6 months and receive direct feedback from the user team offshore, who were in the best position to provide this.

See excerpt of mail shared on behalf of the offshore user team for your records:

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PROJECT TEAM FEEDBACK

Following this, we are indeed delighted to have this outcome which indicates significantly improved performance and maintenance experience, including safety conditions offered by the arrestors. This attests to the high quality, standards, and excellent performance which the installed units have been designed to deliver.

Welldone to the team and congratulations to **PROTEGO** in partnership with **IKOSH** for the remarkable delivery which has provided not just performance success, but business value regarding high OPEX cost reduction and schedule benefits, sustaining the Bonga asset integrity and safety desired.

Cordialement,

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