#### Is steam safe for tank internals (painting, coating, accessories, etc.) and staff involved into tank cleaning operations?

Yes, it is. Steaming as a standard process is widely used in oil industry for cleaning of vessels,

hoses, including rubber hoses. Steam is supplied straight into the sludge. Steam jets are not directed towards the tank internals, so steam does not heat or damage them. During steaming, tank cleaning operations are performed without staff presence inside the tank.

## Is this technology suitable for tanks with floating or fixed roofs?

The proposed technology can be applied for floating roof tanks, fixed roof tanks and fixed roof tanks with internal floating roofs.

#### Is nitrogen required to prevent emissions to the atmosphere?

No. it is not. As the steam blanket is used.

#### Are there any emissions to the atmosphere?

No. there are not.

Before the inlet of the steam directly into the oil sludge, the steam is supplied into the space between the sludge and the roof. Thus, the steam blanket appears, which prevents possible emissions of gases to the atmosphere.

#### Where do you get steam from?

It can be sourced either from a steam line (if available on site) or a steam generator.

#### How nozzles are installed inside the tank?

Steam nozzles can be installed:

- Through the space between tank shell and tank roof seal
- Through the roof manholes
- Through the roof support legs sleeves

#### Do you use any chemicals while the tank cleaning process?

No, we do not. It helps us to keep the technology green and environmentally friendly. Moreover, it helps to avoid any damage to pipelines and/or other facilities.

#### What is the amount and the quality of the recovered oil?

Up to 97% of oil can be recovered. Due to the high quality and compliance with the requirements, the recovered oil can be returned

# **How many** containers are required to deliver the tank cleaning system to the site?

The tank cleaning system can be transported in a 40 ft. container, so it can be mobilized within a very short time.

#### Does your tank cleaning technology require cold cutting?

No, it is not required. This is one of the advantages of the technology over the other tank cleaning methods maintenance of tank integrity

#### Is your tank cleaning technology cost-effective?

Yes, it is. The benefits gained by the Client are as follows:

- Minimal tank downtime against other methods
- Minimal disposal of sediments
- High value of oil recovery

# Where can the recovered oil be transferred after cleaning?

It can be transferred into another operating crude oil tank or production line or another place designated by the Client.

# to the Client.

#### What is the procedure for pumping out the recovered oil?

Oil recovery can be performed:

- Through a roof manhole
- Through a draw-off line
- Through a side opening if the oil sludge level is lower than the level of the side opening

# Why do you claim your technology can be applied for damaged tanks?

The technology does not require any staff presence inside the tank during steaming and oil recovery stages

Steam nozzles can be immersed into the sludge from any available location, not only through the roof.

Arkoil has an extensive experience in cleaning of tanks with damaged roofs, collapsed pontoons, leaking bottoms, etc. The system can be customized to any type of damage

## Are there any ambient temperature restrictions for tank cleaning operations?

No, there are not. The tank cleaning technology proved to be effective at extreme weather conditions (low and high temperatures, high humidity, etc.).