

Maintenance of VRUs

1 Competence of LeaOil GmbH

The LeaOil personnel consists of highly qualified engineers, which are since the early 1990s involved in the sales, the interpretation, the commissioning and after-sales service for vapor recovery units. This concerns installations according to the following principles which, for which we possess references:

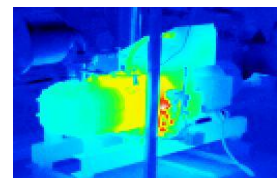
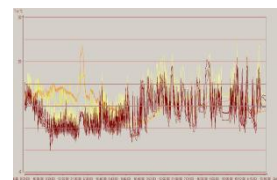
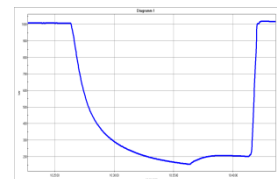
- Adsorption on activated carbon with subsequent absorption of various modifications
- Membrane technology (usually with subsequent Adsorption on activated carbon)
- cryogenic absorptive washing (usually with subsequent Adsorption on activated carbon)

If you have a vapor recovery units of an other type (e.g. Gas engine or thermal or catalytic burning), we are also willing to place an offer, after an inspection of the plant. Since we also have great experience in the design and control of loading facilities (truck, railcar ship) we always keep in mind the intercourse between vapor recovery units and the loading facility. If the vapor recovery is combined with upstream vapor accumulator, so this with also be inspected.

2 Possible content of the maintenance work

2.1 Mechanical part of the unit, process technical inspection

- Inspection of the loading facility, Proof of the seals and flanges
- Inspection and control vapor accumulator (if installed)
- Audiovisual control of the complete unit regarding overall condition, damages and weaknesses
- Evaluation of noise and vibration for rotary Equipment
- Recording and lubrication all lubrication points, listing of the lubrication points
- Recording of pressure plots of process technical relevant points of the system, if necessary calculation of pressure losses in the system
- Check the differential pressures on filters and adsorber, where necessary, cleaning of filters
- Recording of temperature curves to procedurally relevant components of the system (adsorber, chiller)
- Check the temperatures of fluids and procedural relevant media (e.g. absorbent, glycol), whether they are in the allowed limits
- Check all engine and transmission mounts with thermal imager, evaluation of the temperature, if relevant and recording of components in control cabinets (contactors, terminals, fuses), to recognize contact problems
- Calibrate of an existing FID
- Drawing of charcoal samples and analytics of the activated carbon
- Measurement of the glycol-concentrations with a calibrated density meter
- Check the current draw of pumps, compressors, blowers, etc. (also three phase)
- Check on the power grid for fluctuations or spikes
- Material tests, wall thickness measurement



2.2 Electric and Instrumentation

2.2.1 Short inspection of the loops electrical paths

2.2.2 Testing and where necessary calibration of measurement devices

- Pressure transmitter (with calibrated pressure measuring device)
- Temperature transmitter (with calibrated temperature measuring device)
- Level transmitter
- Levelswitches
- Check of the fluid flow in the different unit parts

2.3 PLC of the unit and software

- Analysis of the PLC
- Check of the emergency shut down system
- If required, remote control of the PLC

2.4 Emissions measurements

Measurement of the output of the VRU (total hydrocarbons) with own calibrated FID. Representation of trends. Elemental analysis such as methane, ethanol, and benzene on request.

3 Reports

3.1 Summary Report in tabular form

- Maintenance work carried out
- Calibrations and adjustments
- Measurements
- Photos

3.2 Detailed report in text form with information about

- Any deficiencies identified
- Any safety issues
- Notes and suggestions for safety or maintenance required retrofitting
- Statements about the reliability of the installations