Comparison of alternative Storage Methods

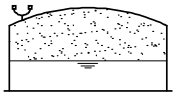
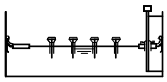
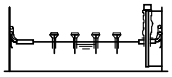
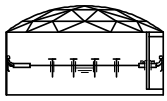
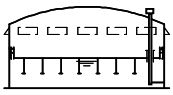
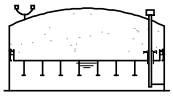
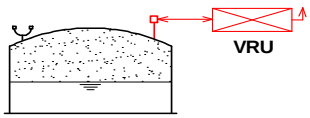
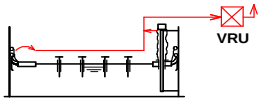
IMHOF Tank-Technik

Evaluation of emission for a 33,000 m³ storage tank with 44 meters in diameter, according to API method, chapter 19

Storage product: gasoline (RVP 600 mbar) / temperature: Ta = Ts = 10 °C; DTa = 8°C / wind speed: 3,0 m/s

Quantity of Emission for 12 filling cycles per year

Quantity of Emission for 0 filling cycles per year

		Tank dia. 44 meters	annual emissions [kg/y]	Sources of emissions: rim space	guide pole	roof legs	other installations	tank wall wetting	efficiency of tank [%]
case 1:	Fixed roof tank without floating roof P/V-valve only	 comparison tank (base case)	294.583 26.917						0,0
case 2:	Floating roof tank	 double seal, guide pole seal, roof leg seals	1.266 1.196	895	122	122	58	70 0	99,6 95,6
case 3:	Floating roof tank	 threefold seal, guide pole seal + Helicoat*, roof leg seals	435 365	169	17	122	58	70 0	99,9 98,6
case 4:	Floating roof tank with alu dome	 double seal, guide pole seal, without roof leg seals	388 318	116	17	150	35	70 0	99,9 98,8
case 5:	Fixed roof tank with steel floating roof free ventilated	 double seal, guide pole seal, roof legs fix	238 168	116	17	0	35	70 0	99,9 99,4
case 6:	Fixed roof tank with steel floating roof P/V-valve	 double seal, guide pole seal, roof legs fix	~ 238 ~ 168	***Emissions corresponding to case 5, but concentrations of vapour in critical range (in part above LEL) => safety armature required. The effect of the P/V-valve is compensated by higher temperatures of product in the unventilated tank.***					99,9 99,4
case 7:	Fixed roof tank + vapour balancing + vapour treatment		***High investment and operating costs / high total emissions (CO2, NOx, methane ...) in consideration of direct emissions and emissions by use of electric power and other utilities. Risk of failure of vapour treatment plant.***						
case 8:	Floating roof tank + vapour suck off from seal spaces + vapour treatment	 threefold seal, guide pole seal + Helicoat*, roof leg seals	***Small compact single-stage adsorption equipment sufficient. Low investment and low operating costs.***						

* Guide pole cover