

CLAIMS

1. A method for removing a contaminant from a process system, comprising the steps of:
 - (i) providing a carrier gas source;
 - (ii) providing a non-aqueous solvent source;
 - (iii) delivering the carrier gas and the non-aqueous solvent from their respective sources to the process system; and
 - (iv) removing said contaminant out of said system, wherein substantial amount of said contaminant is dissolved in said solvent in a vapor or liquid state as it is being removed from said system.
2. The method of Claim 1, wherein the process system is selected from the group consisting of a reactor, an absorbent chamber containing a molecular sieve, and a pressure vessel.
3. The method of Claim 2, wherein the process system contains a medium containing at least one material selected the group consisting of a catalyst, a support material, a molecular sieve and a desiccant.
4. The method of Claim 1, wherein the process system comprises a reactor circuit used in a refining hydrotreating process and associated equipment.
5. The method of Claim 1 wherein said associated equipment is at least one member selected from the group consisting of a shell and tube exchanger, a fired heater, a distillation tower, and an interconnecting piping.
6. The method of claim 1 wherein the carrier gas is at least one member selected from the group consisting of inert gas, purchase fuel gas and hydrogen.
7. The method of claim 1 wherein the carrier gas is at least one dry gas with the chemical formula C_nH_{2n+2} , wherein n is an integer greater than 0 but less than 6.

8. The method of claim 7 wherein the carrier gas is at least one gas selected from the group consisting of ethane and methane.

9. The method of Claim 1, wherein the contaminant is an organic contaminant.

10. The method of claim 9 wherein said organic contaminant comprises at least one member selected from the group consisting of crude oil and its derivatives, hydrocarbons and noxious gases.

11. The method of claim 10, wherein said organic contaminant is a noxious gas, said noxious gas being at least one member selected from the group consisting of hydrogen sulfide, benzene, carbon monoxide, and a light end hydrocarbon, said light end hydrocarbon being capable of resulting in a positive reading when tested for the Lower Explosive Limit (or "LEL").

12. The method of claim 1, wherein the carrier gas is circulated through the system using a compressor.

13. The method of claim 1, wherein the temperature of the equipment in the system is adjusted to a range of between 225 F and 400 F prior to the introduction of the solvent.

14. The method of claim 1 wherein the solvent is introduced into the carrier gas by connecting the gas and solvent sources.

15. The method of claim 1 wherein the solvent is a non-polar organic solvent.

16. The method of claim 1 wherein the solvent is a C1-C50 hydrocarbon.

17. The method of claim 1 wherein the solvent comprises at least one member selected from the group consisting of aliphatic, paraffinic, isoparaffinic, aromatic, naphthenic, olefinic, diene, terpene, polymeric or halogenated hydrocarbon, and wherein the solvent is a naturally occurring, synthetic or processed organic solvent.

18. The method of claim 17 wherein the solvent is a natural terpene or its hydrogenated derivatives.
19. The method of claim 1 wherein the solvent is a processed solvent selected from the group consisting of an aromatic solvent, virgin naphtha, terpene and hexane.
20. The method of claim 1 wherein the solvent comprises one or more organic compounds.
21. The method of claim 1 wherein the solvent is delivered to the system as a vapor and the volumetric or weight ratio of said solvent vapor and the carrier gas is accurately controlled.
22. The method of claim 21 wherein the weight ratio between said solvent vapor and said carrier gas is in the range of about 0.1 to about 6.
23. The method of claim 21 wherein the weight ratio between said solvent vapor and said carrier gas is in the range of about 2 to about 4.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12478580
	Filing Date		2009-06-04
	First Named Inventor	Cody Nath	
	Art Unit		1792
	Examiner Name	Saeed T. Chaudhry	
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