What is claimed:

1. A process for reconditioning a depleted gas from the production of an ozonide from an ethylenically unsaturated compound, comprising the steps of

contacting an ethylenically unsaturated compound with an ozone enriched gas in an absorber column to form an ozonide and a depleted gas, wherein the depleted gas is depleted of ozone and is contaminated with organic compounds; and

reconditioning the depleted gas from the absorber column to form the ozone enriched gas for reuse in the absorber column,

the reconditioning process comprising:

introducing water vapor into the depleted gas and removing a portion of the organic compounds with a wet arrestor;

removing a portion of the residual organic compounds from the depleted gas in an oxidizer;

removing a portion of the water vapor from the depleted gas;

reestablishing a desired oxygen concentration in the depleted gas;

replenishing a desired ozone concentration in the depleted gas to form an ozone enriched gas; and

introducing the ozone enriched gas to the absorber column.

2. The process of claim 1 wherein at least about 80% of the organic compounds in the depleted gas are removed in the wet arrestor.

3. The process of claim 1 or 2 wherein the oxidizer is one of a thermal oxidizer, a catalytic oxidizer, and combinations thereof.

4. The process of one of claims 1 to 3 wherein the depleted gas is heated to a temperature of at least 600°F for the oxidizer.

5. The process of one of claims 1 to 4 wherein oxidizer removes at least 90% of the residual organic compounds.

6. The process of one of claims 1 to 5 wherein the removing a portion of water from the depleted gas comprises:

compressing the depleted gas in a gas compressor;

decreasing the temperature of the depleted gas in a cooling system; and

lowering the relative humidity of the depleted gas in a drying unit.

7. The process of claim 6 wherein the pressure of the depleted gas is ~~increase~~ increased to at least about 10 psig in the gas compressor.

8. The process of claim 6 or 7 ~~before~~ wherein the cooling system includes a water cooler that decreases temperature of the depleted gas to below about 120°F.

9. The process of one of claims 6 to 8 wherein the cooling system includes a gas chiller that decreases temperature of the depleted gas to below about 50°F.

10. The process of one of claims 6 to 9 wherein the drying system includes a water separator that removes the water condensed in the water cooler and gas chiller to remove about 80% to about 90% of the water from the gas stream.

11. The process of one of claims 6 to 10 wherein the drying system includes a desiccant bed that decreases the relative humidity of the oxygen depleted gas to correspond with a dew point of below about -50°F at a pressure of about 15 psig.

12. The process of one of claims 1 to 11 wherein the desired concentration of oxygen in the depleted gas is replenished by removing a portion of the depleted gas and replacing the removed portion with a quantity of fresh oxygen gas.

13. The process of one of claims 1 to 12 wherein the desired ozone concentration is replenished by passing the depleted gas through an ozone generator to form the ozone enriched gas.

14. A process for removing organic compounds from a depleted gas from an absorber column in which an ozonizing reaction is conducted, the process comprising:

introducing water vapor into and removing a portion of the organic compounds from the depleted gas in a wet arrestor; and

removing a portion of the residual organic compounds in the depleted gas in an oxidizer.

15. The process of claim 14 wherein at least about 80% of the organic compounds are removed in the wet arrestor.

16. The process of claim 14 or 15 wherein the oxidizer is a thermal oxidizer, a catalytic oxidizer, or a combination thereof.

17. The process of one of claim 14 or 16 wherein the oxidizer has a temperature of at least 600°F.

18. The process of any one of claims 14 to 17 wherein oxidizer removes at least at least 90% of the organic compounds reaching the oxidizer.

~~19. A process for removing water vapor from a depleted gas from an absorber column in which an ozonizing reaction is conducted, the process comprising:~~

~~compressing the depleted gas in a gas compressor;~~

~~decreasing the temperature of the depleted gas in a cooling system; and~~

~~lowering the relative humidity of the depleted gas in a drying unit.~~

~~20. The process of claim 19 wherein the pressure of the depleted gas is increase to at least about 10 psig in the gas compressor.~~

~~21. The process claim 19 or 20 wherein the cooling system includes a water cooler that decreases temperature of the depleted gas to below about 120 °F.~~

~~22. The process of any one of claims 19 to 21 wherein the cooling system includes a gas chiller that decreases temperature of the depleted gas to below about 50°F.~~

~~23. The process of any one of claims 19 to 22 wherein the drying unit includes a water separator that removes the water condensed in the water cooler and gas chiller to remove about 80% to about 90% of the water from the gas.~~

~~24. The process of any one of claims 19 to 23 wherein the drying system includes a desiccant bed that decreases the relative humidity of the oxygen depleted gas to correspond with a dew point of below about -50 °F at a pressure of about 15 psig.~~

~~25.~~19. A system for removing organic compounds from a depleted gas from an absorber column in which an ozonizing reaction is conducted, the system comprising in fluid communication with the absorber column:

a wet arrestor configured to receive the depleted gas from the absorber column and to introduce water vapor to and remove a portion of the organic compounds from the depleted gas; and

a oxidizer configured to remove a residual portion of the organic compounds from the depleted gas wherein the oxidizer includes at least one of a thermal oxidizer and a catalytic oxidizer.

~~26. A system for removing water vapor from a depleted gas from an absorber column in which an ozonizing reaction is conducted, the system comprising in fluid communication with the absorber column:~~

~~a gas compressor configured to receive the depleted gas from the absorber column and to compress the depleted gas;~~

~~a cooling unit configured to receive the compressed depleted gas and to lower the temperature of the depleted gas; and~~

~~a drying unit configured to receive the cooled depleted gas and to lower the relative humidity of the depleted gas.~~

~~27.~~20. A system for reconditioning a depleted gas from an absorber column in which an ozonizing reaction is conducted, the system comprising in fluid communication with the absorber column:

a wet arrestor configured to receive the depleted gas from the absorber column and to introduce water vapor to and remove a portion of organic compounds from the depleted gas;

a combustion chamber configured to receive the depleted gas from the wet arrestor and to combust a portion of the organic compounds in the water vapor containing depleted gas;

a catalyst bed configured to receive the depleted gas from the combustion chamber and to catalyze the degradation of a portion of the organic compounds from the water vapor containing depleted gas;

a gas compressor configured to receive the depleted gas vented from the catalyst bed and to compress the depleted gas;

a cooling system configured to receive the compressed depleted gas and to lower the temperature of the depleted gas;

a drying unit configured to receive the cooled depleted gas and to lower the relative humidity of the depleted gas; and

an ozone generator.