What is claimed is:

1. A process exhaust air treatment system, comprising at least:

an exhaust air concentration unit comprising a zeolite rotor, a rotor surface of the zeolite rotor being divided into an adsorption zone, a cooling zone, and a desorption zone, wherein the process exhaust air contains VOCs exhausting from the petrochemical industry, semiconductor industry, or steel plants, the adsorption zone is used to introduce a process exhaust air for adsorbing at least a part of volatile organic compounds (VOCs) in the process exhaust air and outputting a filtered air; the cooling zone is used to introduce a cooling air for cooling the zeolite rotor that accumulates heat and heats up as a result of desorption, the cooling air being a branch flow of the process exhaust air or an external air; and the desorption zone is used to introduce a desorption air for desorbing the VOCs adsorbed by the zeolite rotor and outputting a VOC-concentrated air;

an incineration unit having at least an incineration apparatus and communicated with the exhaust air concentration unit for incinerating the VOCs in the VOC-concentrated air to generate an incinerated air; and

a dust removal unit comprising at least a dust filtering device, a waste heat recovery apparatus, and a

scrubbing tower, in which the dust filtering device being in air communication with the incineration apparatus for receiving the incinerated air, the waste heat recovery apparatus is disposed at a downstream end of the dust filtering device and is in air communication with the dust filtering device; the scrubbing tower is disposed at a downstream end of the waste heat recovery apparatus or an upstream end of the dust filtering device; wherein

in the inside of the dust filtering device further comprises a ceramic filter tube or a filter bag, in which the ceramic filter tube is at least one selected from the group consisting of a tubular ceramic filter tube, a tubular catalyst-containing ceramic filter tube, a rectangular ceramic filter tube, and a rectangular catalyst-containing ceramic filter tube; the filter bag is at least one selected from the group consisting of a tubular or rectangular film-coated catalyst filter bag, and a tubular or rectangular double-layer filter bag;

the waste heat recovery apparatus comprises a heat recovery steam generator (HRSG) or an ORC waste heat recovery device for receiving the incinerated air passing through the dust filtering device;

the scrubbing tower is a wet-type scrubbing tower or a dry-type scrubbing tower.

2. The process exhaust air treatment system of claim

1, wherein the cooling zone is in air communication with the desorption zone, and the cooling air passing through the cooling zone heats up to turn into the desorption air which enters the desorption zone.

3. The process exhaust air treatment system of claim 1, wherein the exhaust air concentration unit is further provided with a first heat exchanger, wherein a cold flow end of the first heat exchanger is communicated with the desorption zone of the zeolite rotor and the incineration unit for receiving and heating the VOC-concentrated air and then delivering the same to the incineration apparatus in the incineration unit.
4. The process exhaust air treatment system of claim 3, wherein the exhaust air concentration unit is further provided with a second heat exchanger, wherein a cold flow end of the second heat exchanger is communicated with the cooling zone and the desorption zone of the zeolite rotor for receiving the cooling air that passes through the cooling zone and transferring the same to the desorption zone after being heated to the temperature required for the desorption air.
5. The process exhaust air treatment system of claim 4, wherein the incineration apparatus, the first heat exchanger, and the second heat exchanger are in air communication sequentially; and after being

discharged from the incineration apparatus, the incinerated air is introduced into hot flow ends of the first heat exchanger and the second heat exchanger sequentially as a heat source for heat exchange.

6. The process exhaust air treatment system of claim 1, wherein when the filter bag is disposed inside the dust filtering device and is made of a non-ceramic material, the dust filtering device is a low-temperature dust collector; and a third heat exchanger is further disposed in the exhaust air concentration unit, wherein a hot flow end of the third heat exchanger is communicated with the second heat exchanger and the dust filtering device for receiving the incinerated air from the second heat exchanger, and a cold flow end of the third heat exchanger is communicated with the adsorption zone of the zeolite rotor for receiving a part of the filtered air discharged from the adsorption zone of the zeolite rotor.
7. The process exhaust air treatment system of claim 1, wherein the scrubbing tower is a wet-type scrubbing tower, disposed at a downstream end of the waste heat recovery apparatus and is in air communication with the waste heat recovery apparatus.
8. The process exhaust air treatment system of claim, wherein the scrubbing tower is a dry-type scrubbing

tower, disposed at the upstream end of the dust filtering device and is in air communication with the dust filtering device.