

CLAIMS

1. A method of optimising operating conditions in an abatement apparatus configured to treat an effluent stream containing PFC from a processing tool, said
5 method comprising:
 changing an operating parameter which controls an operating condition of said abatement apparatus;
 determining a change in a PFC concentration by measuring a PFC
concentration present in an exhaust stream of said abatement apparatus; and
10 determining whether to retain said operating parameter based on said change in said PFC concentration.
2. The method of claim 1, wherein said changing comprises adjusting said
operating parameter from an initial operating parameter to an adjusted operating
15 parameter.
3. The method of claim 2, wherein said determining said change comprises determining an initial PFC concentration present in said exhaust stream and a resultant PFC concentration present in said exhaust stream in response to said
20 adjusted operating parameter.
4. The method of any preceding claim, wherein said operating condition comprises one of an operating temperature and oxidising/reducing environment of said abatement apparatus.
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5. The method of claims 3 or 4, wherein, when said adjusted operating parameter increases said operating temperature and said resultant PFC concentration is below said initial PFC concentration, but said resultant PFC concentration is above a threshold concentration, said determining comprises
30 retaining said adjusted operating parameter.

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6. The method of any one of claims 3 to 5, wherein, when said adjusted operating parameter decreases said operating temperature and said resultant PFC concentration is above said initial PFC concentration, but said resultant PFC concentration is above said threshold concentration, said determining comprises
5 one of rejecting said adjusted operating parameter and preventing further changing of said operating parameter to decrease said operating temperature, preferably wherein, when said adjusted operating parameter increases said operating temperature and said resultant PFC concentration is below said initial PFC concentration, but is below said threshold concentration, said determining
10 comprises one of rejecting said adjusted operating parameter and preventing further changing of said operating parameter to increase said operating temperature, preferably wherein, when said adjusted operating parameter decreases said operating temperature and said resultant PFC concentration is above said initial PFC concentration, but is below said threshold concentration,
15 said determining comprises retaining said adjusted operating parameter.

7. The method of any preceding claim, wherein said abatement apparatus comprises an abatement chamber and said operating parameter comprises at least one of a power supplied to heat said abatement chamber, a plasma
20 supplied to said abatement chamber and a oxidant/fuel amount supplied to said abatement chamber, preferably wherein, when said operating parameter comprises said oxidant/fuel amount, said changing comprises increasing said oxidant/fuel amount and said resultant PFC concentration is above said initial PFC concentration, said determining comprises reducing said oxidant/fuel
25 amount while said resultant PFC concentration passes through a minimum value, or wherein, when said operating parameter comprises said oxidant/fuel amount, said changing comprises increasing said oxidant/fuel amount, said resultant PFC concentration is above said initial PFC concentration and said resultant PFC concentration is above said threshold amount, said determining comprises
30 reducing said oxidant/fuel amount while said resultant PFC concentration passes through a minimum value, or wherein, when said operating parameter comprises said oxidant/fuel amount, said changing comprises decreasing said oxidant/fuel

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amount and said resultant PFC concentration is below said initial PFC concentration, said determining comprises reducing said oxidant/fuel amount while said resultant PFC concentration passes through a minimum value.

5 8. The method of claim 7, wherein, when said operating parameter comprises said oxidant/fuel amount, said changing comprises decreasing said oxidant/fuel amount, said resultant PFC concentration is below said threshold concentration and said resultant PFC concentration is less than said initial PFC concentration, said determining comprises reducing said oxidant/fuel amount
10 while said resultant PFC concentration passes through a minimum value.

9. The method of any one of claims 6 to 8, wherein said rejecting comprises changing said operating parameter back to said initial operating parameter, and/or wherein said rejecting comprises changing said operating parameter to a
15 value between said initial operating parameter and said adjusted operating parameter, and/or wherein, when said operating parameter comprises said oxidant/fuel amount and said abatement apparatus is supplied by an enriched air source augmented by at least one of an oxygen and nitrogen source, said changing comprises adjusting at least one of said oxygen and nitrogen source to
20 adjust said oxidant/fuel amount.

10. The method of any preceding claim, comprising iteratively repeating said steps of changing and determining.

25 11. The method of any preceding claim, wherein said determining comprises determining said initial PFC concentration in response to an indication being received which indicates that PFC is present in said effluent stream.

12. The method of any preceding claim, comprising identifying a PFC
30 concentration profile of a processing cycle prior to said changing.

13. The method of claim 12, comprising, when said PFC concentration profile deviates by greater than a maximum deviation amount, said changing occurs in subsequent processing cycles.
- 5 14. The method of claim 12 or 13, comprising, when said PFC concentration profile deviates by greater than said maximum deviation amount, selecting a time within each processing cycle to determine said change in said PFC concentration present in said exhaust stream.
- 10 15. An abatement apparatus configured to treat an effluent stream containing PFC from a processing tool, comprising:
a controller operable to change an operating parameter which controls an operating condition of said abatement apparatus;
a sensor operable to determine a change in a PFC amount present in an
15 exhaust stream of said abatement apparatus, wherein said controller is operable to determine whether to retain said operating parameter based on said change in said PFC amount present in said exhaust stream determined by said sensor.