CLAIMS

1. An inlet head assembly for an abatement apparatus for abating an effluent stream from a semiconductor processing tool, said inlet head assembly comprising:

an inlet head;

a pilot nozzle, extending within said inlet head and configured to supply at least one pilot combustion reagent stream to a downstream abatement chamber of said abatement apparatus; and

a plurality inlet nozzles, each extending within said inlet head, at an angle between 5° and 60°, preferably between 5° and 45° and more preferably between 5° and 20°, with respect to the axial orientation of said pilot nozzle and configured to supply an associated effluent stream for abatement within said abatement chamber, said plurality of inlet nozzles being positioned around said pilot nozzle, wherein each of the plurality of inlet nozzles is provided with a first outer nozzle configured to deliver fuel as an annular curtain surrounding the effluent stream and a second outer nozzle around the first outer nozzle and configured to deliver oxidant as an annular curtain surrounding the fuel.

2. The inlet head assembly of claim 1, wherein said plurality of inlet nozzles are at least one of:

positioned to at least partially surround said pilot nozzle;

positioned circumferentially around said pilot nozzle;

equally spaced circumferentially around said pilot nozzle; and

positioned on a pitch circle around said pilot nozzle.

3. The inlet head assembly of claim 1 or 2, wherein said plurality of inlet nozzles and said pilot nozzle are positioned to be spaced apart.

4. The inlet head assembly of any preceding claim, wherein said pilot nozzle is configured to initiate combustion of said at least one pilot combustion reagent stream and said plurality of inlet nozzles are configured to supply at least one

combustion reagent stream with said effluent stream and are positioned to propagate combustion of said combustion reagent stream supplied by each inlet nozzle from said at least one pilot combustion reagent stream.

5. The inlet head assembly of any preceding claim, wherein said pilot nozzle comprises an inner nozzle configured to supply a first combustion reagent stream and an outer nozzle configured to supply a second combustion reagent stream as an annular curtain surrounding said first combustion reagent stream.

6. The inlet head assembly of any preceding claim, comprising a further combustion reagent nozzle extending within said inlet head and configured to supply at least one further combustion reagent stream to a downstream abatement chamber of said abatement apparatus.

7. An inlet head assembly for an abatement apparatus for abating an effluent stream from a semiconductor processing tool, said inlet head assembly comprising:

an inlet head;

a pilot nozzle extending within said inlet head and configured to supply at least one pilot combustion reagent stream to a downstream abatement chamber of said abatement apparatus; and

a plurality inlet nozzles, each extending within said inlet head and configured to supply an associated effluent stream for abatement within said abatement chamber, said plurality of inlet nozzles being positioned around said pilot nozzle;

comprising a further combustion reagent nozzle extending within said inlet head and configured to supply at least one further combustion reagent stream to a downstream abatement chamber of said abatement apparatus,

wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to be angled with respect to said pilot nozzle and preferably wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated supply at least one of said

effluent stream and said further combustion reagent stream angled with respect to said pilot combustion reagent stream.

8. The inlet head assembly of claims 6 or 7, wherein said further combustion reagent nozzle is at least one of:

configured to supply said at least one further combustion reagent stream to at least partially surround those plurality of effluent streams supplied to the abatement chamber by said plurality of inlet nozzles; and

configured to supply said at least one further combustion reagent stream as an annular curtain at least partially surrounding those plurality of effluent streams supplied to the abatement chamber by said plurality of inlet nozzles.

9. The inlet head assembly of any one of claims 6 to 8, wherein said further combustion reagent nozzle comprises at least one of:

a first combustion reagent nozzle configured to supply a first combustion reagent stream and a second combustion reagent nozzle configured to supply a second combustion reagent stream; and

a first annular nozzle configured to supply said first combustion reagent stream as a first annular curtain at least partially surrounding those plurality of effluent streams supplied to the abatement chamber by said plurality of inlet nozzles and said second combustion reagent nozzle comprises a second annular nozzle at least partially surrounding said first annular nozzle and is configured to supply said second combustion reagent stream as a second annular curtain at least partially surrounding said first annular curtain.

10. The inlet head assembly of any one of claims 6 to 9, wherein said further combustion reagent nozzle at least partially surrounds said plurality of inlet nozzles, and/or wherein said further combustion reagent nozzle is positioned concentrically with said pilot nozzle; and/or wherein said first combustion reagent stream comprises a fuel and said second combustion reagent stream comprises an oxidant.

11. The inlet head assembly of any one of claims 6 to 10, wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to be parallel with said pilot nozzle and preferably wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to supply at least one of said effluent stream and said further combustion reagent stream parallel with said pilot combustion reagent stream.

12. The inlet head assembly of any one of claims 6 to 11, wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to be angled with respect to said pilot nozzle orientated in the axial direction and preferably wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated supply at least one of said effluent stream and said further combustion reagent stream angled with respect to the axial direction of said pilot combustion reagent stream.

13. The inlet head assembly of any one of claims 6 to 12, wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated towards said pilot nozzle and preferably wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to supply at least one of said effluent stream and said further combustion reagent stream to converge with said pilot combustion reagent stream.

14. The inlet head assembly of any one of claims 6 to 13, wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated away from said pilot nozzle and preferably wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is orientated to supply at least one of said effluent stream and said further combustion reagent stream to diverge from said pilot combustion reagent stream.

15. The inlet head assembly of any one of claims 6 to 14, wherein at least one of said plurality of inlet nozzles and said further combustion reagent nozzle is

orientated with an angle of up to 60°, preferably up to 45°, preferably up to 20°, preferably up to 15°, preferably up to 12.5°, and preferably up to 10°.