CLAIMS

1. A method to roast coffee beans in a roasting system (10)), said system comprising :
- a roasting apparatus (1), and
- a smoke treating unit (2) configured to treat the smoke produced by the roasting apparatus, said smoke treating unit comprising at least one filtering device (221, 222, 223) configured for filtering particulate matters or VOCs, said filtering device being able to retain a pre-determined maximal amount of particulate matters or VOCs,
- a control system (3) operable to control the roasting process,
wherein at each roasting operation implemented in the roasting apparatus, the method comprises the steps of :
- obtaining directly or indirectly the quantity of beans roasted during said roasting operation and the level of roasting applied to the beans during said roasting operation,
- determining the amount of particulate matters or VOCs retained in said filtering device (221, 222, 223) during said roasting operation based on said obtained quantity of beans roasted and on said obtained level of roasting,
- determining the global amount of particular matters or VOCs retained in said filtering device (221, 222, 223) during all the roasting operations implemented since the last cleaning operation of the filtering device,
- estimating the number of roasting operations still able to be implemented before said global amount is equal to the pre-determined maximal amount of particulate matters or VOCs able to be retained by the filtering device.

2. A method according to Claim 1, wherein the smoke treating unit (2) comprises at least one filtering device in the list of : a high efficiency particulate accumulator filter (223), a metallic filter (223), an electrostatic precipitator (222), an active carbon filter (221).

3. A method according any one of the precedent claims, wherein said method comprises the steps of :
- obtaining the type of beans roasted during said roasting operation,
- determining the amount of particular matters or VOCs in the filtering device (221, 222, 223) during the roasting operation based on the obtained quantity of said type of beans roasted and on the obtained level of roasting of said type of beans.

4. A method according any one of the precedent claims, wherein the number of roasting operations still able to be implemented is estimated based on :

- the pre-determined maximal amount of particulate matters or VOCs able to be retained by the filtering device, and

- a specific type of roasting operation, said type of roasting operation being defined by a specific quantity of beans roasted during said roasting operation and a specific level of roasting applied to the beans during said roasting operation,

5. A method according to the precedent claim, wherein said specific type of roasting operation is defined from the past roasting operations implemented within the roasting apparatus, preferentially through machine learning or through statistics.

6. A method according to any one of the precedent claims, wherein the roasting apparatus (1) is configured to enable the input of the quantity of beans roasted during said roasting operation and/or the level of roasting applied to the beans during said roasting operation.

7. A method according to any one of the precedent claims, wherein :
- the smoke treating unit (2) comprises a particulate matter sensor (26) or a VOCs sensor (27) positioned downstream the roasting apparatus, and
- at each roasting operation implemented in the roasting apparatus, the quantity of beans roasted during said roasting operation and the level of roasting applied to the beans during said roasting operation are obtained from the quantity of particulate matter or VOCs measured by said sensor (26, 27).

8. A method according to the precedent claim, wherein the smoke treating unit (2) comprises :
- an electrostatic precipitator (222) and a sensor (26) for measuring PM, said PM sensor being positioned downstream said electrostatic precipitator,
and/or
- an active carbon filter (221) and a sensor (27) for VOCs, said VOCs sensor being positioned just downstream said active carbon filter.

9. A method according to Claims 6 and 7 wherein :
- at each roasting operation implemented in the roasting apparatus, the quantity of beans roasted during said roasting operation and the level of roasting applied to the beans during said roasting operation are obtained :
  . from the quantity of particulate matter or VOCs measured by said sensor (26, 27) downstream the roasting apparatus, and
  . from the input of the quantity of beans roasted during said roasting operation and/or the level of roasting applied to the beans during said roasting operation.

10. A method according to any one of the precedent claims, wherein the smoke treating unit (3) comprises several filtering devices (221, 222, 223) and said method is applied for each filtering device of the smoke treating unit.

11. A method according to any one of the precedent claims, wherein the roasting apparatus comprises a display unit (13) and the method comprises the step of displaying the estimated number of roasting operations still able to be implemented before the global amount is equal to the pre-determined maximal amount of particulate matters or VOCs able to be retained by the filtering device.

12. A method according to any one of the precedent claims, wherein the smoke treating unit (2) comprises a cleanable smoke collecting device (21) configured to collect smoke from the outlet (11) of the roasting apparatus
wherein at each roasting operation implemented in the roasting apparatus, the method comprises the steps of :
- determining the amount of residues trapped in said smoke collecting device (21) during said roasting operation based on said obtained quantity of beans roasted and on said obtained level of roasting,
- determining the global amount of residues trapped in said smoke collecting device (21) during all the roasting operations implemented since the last cleaning operation of the smoke collecting device ,
- estimating the number of roasting operations still able to be implemented before said global amount is equal to a pre-determined maximal amount of residues able to be deposited in the smoke collecting device.

13. A system (10) for roasting coffee beans in a room (100), said system comprising :
- a roasting apparatus (1), and
- a smoke treating unit (2) configured to treat the smoke produced by the roasting apparatus, said smoke treating unit comprising at least one filtering device (221, 222, 223) configured for filtering particulate matters or VOCs, said filtering device being able to filter a pre-determined maximal amount of particulate matters or VOCs before being cleaned,
- a control system (3) operable to control the roasting process according to the method to roast of any one of Claims 1 to 12.

14. A computer program comprising instructions which, when executed by a computer, processor or control unit (30), cause the computer, processor or control unit (30) to perform the method to roast of any one of Claims 1 to 12 in the system of Claim 13.

15. A computer program according to the precedent claim, wherein said computer program is executed by the processing unit of the roasting apparatus and the processing unit of the smoke treating unit, both processing units communicating together.

16. A computer readable storage medium comprising instructions which, when executed by a computer, processor or control unit cause the computer, processor or control unit (30) to carry out the method to roast of any one of Claims 1 to 12 in the system of Claim 13.