

## Analysis of nitric oxide emissions from anode baking furnace through numerical modeling

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# **Propositions**

accompanying the dissertation

## **ANALYSIS OF NITRIC OXIDE EMISSIONS FROM ANODE BAKING FURNACE THROUGH NUMERICAL MODELING**

by

**Prajakta NAKATE**

1. Nitric oxide emissions are highly sensitive to the flow dynamics that determine the local overheating in a combustion chamber. (Chapter 6)
2. It is challenging to achieve convergence of a multi-physics model if one tries to achieve advancement in both the physical model and the size of the system of equations. Focus on improvement in one of these parameters leads to a reasonable solution. (Chapter 5)
3. The importance of an appropriate meshing technique is underestimated in the description of numerical models. (Chapter 4)
4. Emission control at the source through process optimization still has a significant scope of improvement. Moreover, such optimization continuously needs to be updated due to possible changes in the environmental regulations and fuel.
5. Combating climate change can be achieved by reducing the gap between academic research and industrial application.
6. The coherence of a research project is fostered by reflection through writing.
7. A successful attempt to solve a complex problem always involves taking a step back towards a simple version of the problem.
8. Everything in the Earth's eco-system is connected. With increasing emissions, the risk of crossing the tipping point of the Earth's system increases.
9. The success of any research work is influenced by two key factors: Patience and Perseverance.
10. Every cuisine has its own flavours. The fusion of these flavours leads to a loss of authenticity but may result in an innovative flavour. This is analogous to having an international team.