

Title: Clean Energy from Argo residues – A route to reduce air pollution and improve air quality

Applicant Details:

1. Name :- Syed Mughees Ali
Department : Aerospace Engineering
Degree : Integrated M.S-PhD
University: IIT Madras, Chennai
2. Name :- A Mani Kalyani
Department : Mechanical Engineering
Degree : Integrated M.S-PhD
University: IIT Madras, Chennai

Proposal summary

Almost two-thirds of Indian population earn their living from agriculture. Ineffective burning of agricultural residues is one of the major reasons for generation of smoke and emissions. Farmers after harvesting paddy, often burn the residues in open, leading to generation of particulate matter and emissions. This particulate matter combines with water vapour in the atmosphere to generate smog. This is one of the major cause of respiratory diseases , in metro cities like New-Delhi, Faridabad and Agra etc. Our aim is to develop systems for effective burning of agro residues to reduce smoke emissions and in turn improve air quality.

Our idea is to develop a system for the effective burning of agricultural residues coming from the paddy fields, for smoke reduction and hence improving the air quality. The process involves conversion of agro residues coming out of paddy fields into briquettes/pellets to increase the density and then use these agro residues as a fuel in fixed bed reactor. By carefully metering the flow of air, the system may be allowed to operate under sub-stoichiometric conditions to yield syngas that can be used for power generation. Such a controlled supply of air for combustion will reduce the emissions and give a greater control on the process. This syngas produced can be used in IC engines to produce power which can act as a stand-alone unit for power generation.

