

Fundamental Investigations of Ion Sensing in Gas Turbines

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Industrial Site: Engine Systems Research, Woodward Industrial Controls,
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Objectives:

- Perform fundamental investigations of ionization sensing in gas turbine combustors using electromagnetic theory and electrostatic finite element analysis.

Achievements:

- Developed simple theoretical models illustrating the function of ion sensing in a gas turbine combustor.
- Performed electrostatic finite element analysis on gas turbine combustor and fuel nozzle models equipped with ion sensing.
- Presented analysis results and their implications to interested parties.
- Prepared a manual for performing electrostatic FEA.

Spin-Offs:

- Ion sensing FEA can be adapted to any type of combustor geometry to analyze a specific application.
- Fundamental analyses will be useful as a marketing tool for ion sensing.
- Ion sensing FEA manual will be useful in quickly generating simple models for analysis.

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