

SEMINAR - סמינר

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ד'
15.02.2017 (י"ט בשבט, תשע"ז), בבניין דן קאהן, אודיטוריום 1, 13:30.

ירצה:

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על הנושא:

Twin Cavity 2D Trapped Vortex Combustor

The seminar will be given in English

להלן תקציר ההרצאה:

In the present work, detailed studies of 2D TVC are investigated by using both experimental and numerical methods. For an active cavity flow case, the present results reveal that the pressure drop value across the combustor increases with the mainstream Reynolds number (Re_{ms}) due to the higher velocity gradient between the cavity and mainstream flow. Experimental results indicate that the normalized pressure drop values are in the order 0.35 %, which is significantly lower than that of the conventional swirl combustors (4 - 5 %). An attempt has been made to correlate the flame length with the momentum flux ratio (MFR), overall equivalence ratio (Φ_o) and Damkohler number (Da), which can be useful for the design of TVC in future. Experimental study of static flame stability limit indicates that the cavity fuel-flow rate has to be increased with the primary air flow rate at particular main stream Reynolds number, (Re_{ms}) and equivalence ratio (Φ_{ms}) for sustaining cavity flame. Through subsequent analysis of the blowout data, a correlation between blowout data and product of Da and MFR is proposed in this work.

Analysis of measured pollutant emission levels at the combustor exit brings out that CO and UHC emission level can be reduced considerably by increasing primary air velocity for a fixed value of Re_{ms} and Φ_{ms} . For all the cases considered in the present investigation, the NO_x emission level is less than 5 ppm, which can be attributed to the interaction between the cavity and mainstream flow. Pattern factor (PF) as low as 0.1 could be achieved particularly at higher V_p cases. It can be noted that this value is lower than that of the PF value of swirl combustors (0.2-0.4). Based on the present investigations, it can be concluded that TVC is a viable technology to be considered for future.

בברכה,

המארח: פרופ' סטיבן פרנקל

פרופ' א"מ שאול אולובסקי
מרכז הסמינרים