

**INTERNATIONAL WEBINAR ON  
SINGLE POINT INCREMENTAL FORMING PROCESS:  
ADVANCE AND CHALLENGES  
( 8<sup>th</sup> JULY 2020)**

**REPORT**

The Department of Mechanical Engineering, Nalla Narasimha Reddy Education Society's Group of Institutions has conducted International Webinar on **SINGLE POINT INCREMENTAL FORMING PROCESS ADVANCES AND CHALLENGES** ” on 8<sup>th</sup> July 2020. The Director of the institutions Dr. C.V. Krishna Reddy, has congratulated the department of Mechanical for conducting the program on the above important topic as it very useful for mechanical students and also for the faculty who are interested for research . The program Coordinator Dr. G. Janardhana Raju, Dean, School of Engineering has organized the program.

Mr. Mohanraj Murugesan, Dactoral Research Scholor, JEJU National University South Korea, who is the resource person for the program, started session at 02:00 PM and addressed the participants.

Nalla Narasimha Reddy Group of Institutions  
**NNRG**  
Integrated Campus

**NALLA NARASIMHA REDDY**  
Education Society's Group of Institutions-Integrated Campus  
(Approved by AICTE, PCI, New Delhi. Affiliated to JNTU-Hyderabad)  
Near Narapally, Chowdariguda (V), Korremula 'X' Road, Ghatkesar (M), Medchal (District), Hyderabad - 500088, Telangana.

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Welcome to  
**INTERNATIONAL WEBINAR**  
On  
**SINGLE POINT INCREMENTAL FORMING PROCESS:  
ADVANCES AND CHALLENGES**  
08<sup>th</sup> July 2020 @2:00PM

By  
**Mr. Mohanraj Murugesan**  
Doctoral Research Scholar  
JEJU National University,  
South Korea

Organized By,  
**DEPARTMENT OF MECHANICAL ENGINEERING,  
NNRG, HYDERABAD**

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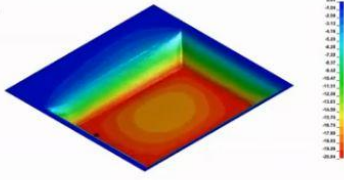
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15:00 / 2:17:30

He has discussed the following items which include latest advances and challenges in sheet metal forming process, and also explained material modeling and its types.

**Contents**

- **Material Modeling**
  - Room Temperature (cold forming)
  - Hot deformation (Hot/Warm Forming)
    - Johnson Cook (JC) material and damage models
    - Modified Johnson Cook (JC) model
    - Modified Zerilli-Armstrong (ZA) model
    - Arrhenius-type constitutive equation considering strain compensation
    - Artificial neural network (ANN) model with a back-propagation (BP) algorithm
- **Incremental Forming Process**
  - Description about Single point incremental forming process (SPIF)
  - Tool path design using Fusion 360 CAM software
  - Experimental procedures along with lubrication selection and microstructure evaluation (FESEM/EDS)
  - Discussion on fractured parts from SPIF process
  - Tool path generation framework for modeling numerical simulation (self developed tool)
  - Comparison among experiments, theoretical and numerical results
  - Detailed conclusions from real-time experience.




41:10 / 2:17:30

**Elevated Temperature Tensile Tests on AISI-1045 Steel**

**Isothermal tensile test conditions**

**Deformation temperatures : 650 to 950 °C**  
**Strain rates : 0.05 to 1.0 s<sup>-1</sup>**



(a) Specimen with isolation part      (b) Specimen with thermocouples      (c) Fractured specimen after the test

Fig.1. Entire experimental procedures.

41:10 / 2:17:30

In this session students and faculty were participated about to 150 members and they got significant exposure on metal forming process, the participants were happy with the session and it was concluded by 3:45PM.



**Dr.G.Janardhana Raju**  
**Dean-SOE & Head MED**  
**Programme Coordinator**

