

## DRAFT REPORT FOR THE PLASTINDIA INTERNATIONAL UNIVERSITY WEBINAR ON “FOAM INJECTION MOULDING”

JUNE 9TH, 2022

As per part of a joint program between Plastindia International University, PIU, and UMass Lowell, the fourth webinar on “Foam Injection Moulding” was delivered by Prof Amir Ameli on June 9th, 2022. Over 125 delegates from across the plastics sector registered for this webinar.

**Ms Pratiksha Jaipal** on behalf of Plastindia International University, welcomed all the attendees. She briefly reviewed the earlier webinars presented by Prof Wan Ting Grace Chen, Prof David Kazmer and Prof Stephen Driscoll. Jacqueline White, Manager of Corporate Training & Education introduced Prof Amir Ameli who was the speaker for the fourth webinar. He presented the webinar on Foam Injection Moulding. Dr. Ameli is a faculty member here in the Plastics Engineering Department at the University of Massachusetts Lowell. His research focus is foaming, 3D printing, and injection molding, particularly for multifunctional polymeric systems. He has published many journal articles, conference papers, several patents and book chapters. His recent patent on plant-based foams has been licensed to commercialize for high-value packaging applications.



**Prof Amir Ameli** reviewed the injection moulding process and the advantages of foamed parts in reducing the weight and enhancing the insulation. He explained different processes used in foam injection moulding. The foaming phenomena is related to solubility of the gas in given polymer under processing conditions. He explained in detail main salient features of all the foam injection molding processes. The motivation for foam Injection molding process are No shrinkage, No sink mark, No residual stress, Dimensional accuracy and Lightweighting. He explained the three stages of Foaming process. In low pressure foam injection moulding, the gas pressure is low and therefore the mould cost is low. The different types of Foam Injection Molding are Low pressure foam injection molding (FIM), High pressure foam injection molding, Gas counter pressure foam injection molding and Mold opening (core-back, breathing mold).



In high pressure foam injection moulding process, the pressure is high and the control over foam cell size is different as compared to that in low pressure process. He narrated the structure size, etc, with

the help of videos which were very illustrative. In reverse pressure, the expansion rate of injection moulded part is controlled. He compared the foaming taking place inside the injection moulded part in terms of onset of foaming, growth of cell size and variation of pressure with time. He also exhibited different parts made by these processes.

#### LEARNING POINTS :

- Learning about polymer foaming with physical blowing agent
- Basic understanding of foam injection molding process
- Insights into several foam injection molding processes and their competitive advantages

Post Prof Amir Ameli's lucid presentation, there was an interesting Q&A session moderated by Prof Dr DD Kale. He appreciated the simple manner in which Prof Ameli explained the foam injection moulding process. Prof Ameli answered all the questions addressed to him. The remaining questions were mailed to him.



Mr Raju Desai, Director of Jyoti Plastics and Vice President of Plastindia International University summarised the lecture. The injection moulding process is used widely in India. He said that interested people in foam injection moulding process may contact Prof Ameli. Mr Raju Desai thanked Prof Ameli and his colleagues at UMass Lowell. He also thanked all his colleagues and Polymerupdate for successful webinar presentation.



**Dignitaries from Plastindia International University and University of Massachusetts, Lowell, USA**

The next webinar will be on July 21st by Prof Dr. Davide Masato's on Introduction to Injection Molding Simulation and its Applications.