

Editorial on Additive Manufacturing

Ananthapadmanaban Dattaguru*

Department of Mechanical Engineering, India

ISSN: 2640-9690



***Corresponding author:** Ananthapadmanaban Dattaguru, Department of Mechanical Engineering, Chennai, India

Submission: 📅 August 30, 2022

Published: 📅 October 20, 2022

Volume 4 - Issue 3

How to cite this article: Ananthapadmanaban Dattaguru*. Editorial on Additive Manufacturing. *Evolutions Mech Eng.* 4(3). EME.000588. 2022.
DOI: [10.31031/EME.2022.04.000588](https://doi.org/10.31031/EME.2022.04.000588)

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Editorial

Additive Manufacturing is a buzz word in technology for the last few years. Most of the manufacturing was being done by both addition and removal of material like casting, welding, and machining. In recent times, mankind has realized that each bit of material saved is very crucial for the health of mother earth. Hence the thrust on additive manufacturing.

Though the term additive manufacturing is new, some of the technologies like solid state welding are being used commercially for a few decades. The crucial difference is that CAD models are being generated after laborious research and the final product alone is manufactured layer by layer using additive manufacturing techniques.

As an educator in the field of materials for the last 27 years, it is fascinating to see, read and hear the fast developments in additive manufacturing. Technologists talk of selective area sintering, plasma sintering, friction stir welding, 3D prototyping and a lot more. It seems that all researchers the world over are into additive manufacturing and the world cannot do without additive manufacturing anymore.

While this is partly true, any technological development should be taken with a pinch of salt. Laser and electron beam welding used in additive manufacturing can be afforded by very few large companies. With the gap between the developed and the undeveloped world again increasing after Covid-19, it would be wiser to slow down and look at the plusses and minuses of additive manufacturing in the new light of Covid-19. It is imperative for global economies to first stabilize, develop peaceful relationships with each other and then grow together.

While I cannot claim to be a top researcher and my research achievements are very modest, It only appeals to common sense not to rush into any new technology blindly. In India, as in many other countries we have got additive manufacturing facilities in a select few Universities and Industries. Others have to import equipment to stay in the competition. Is it really worth spending millions of rupees to upgrade now when the economy is just beginning to show growth?

Again, as an educator, I would like to see smaller Universities and Industries develop their own additive manufacturing systems. This will give the inner satisfaction of doing something worthwhile for their respective countries. In the aftermath of wars between neighbours and competition to outdo each other, I feel that self-reliance should be developed by all countries.

In this context, our Indian concept of Aathmanirbhar Bharath rests on self-reliance. This idea is again not new, but was extensively used by Mahathma Gandhi for the development of cottage industries and small scale industries in India more than 70 years ago. It is old wine in a new bottle, but worth experimenting again and again in the present global context.

Before going fully into additive manufacturing, the material combinations that can be manufactured without defects, the economics of manufacture, local conditions, technical expertise in the local country and a few other factors should be considered in depth. The big

companies will definitely benefit a lot from additive manufacturing and this will have a trickle-down effect, but the downside is that small and medium scale units may be forced to shut down if the technology comes in without thinking in all directions.

Conferences and technical talks should be held with experts and additive manufacturing should come in slowly, phasing out the older obsolete technology. This will help in balanced growth, which will benefit all sections of society.