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The purpose of the Journal is to disseminate knowledge, experience, and best practice in engineering & manufacturing.
The articles are written by practicing professionals in the Engineering City (EC). They cover issues relevant to their projects, operations, and organizations.
The articles address the challenges of the time. As such, the Journal is also a chronicle of the evolution of the EC, its companies, and its individuals.
It is the aim of the Journal to advance the engineering & manufacturing practice, to enrich the engineering & manufacturing community, and to contribute to the worldwide discourse in engineering & manufacturing.

Table of Contents

ORGANIZATIONAL MANAGEMENT 1
. AI will Flood into the Workforce in 2025 1
. What will we be doing in Companies that are ran by AI? 2
. AI in the EC 4
MANUFACTURING CORNER 5
. Improving the SMT Production Line with a Custom TRAY 5
MUSINGS 7
. Taking on the New Year with Bare Hands 7

Organizational Management

. AI will Flood into the Workforce in 2025

by Rama, Engineering Association

It will happen. It is already happening. AI started flooding into the workforce already. Companies that have started incorporating AI in their work have already seeing efficiency increases of 30% and beyond. This means the cost of their operation is decreased by 30%. This means that they can reduce their price in the marketplace. And this is just the beginning.

If we don't start learning how to bring AI into our companies, we will be thrown out of business earlier than we may think. All our technical and application expertise may render useless if we will be overpriced by 30%. We will disappear.

AI is a technology change. It is a jump onto a new S-curve. And a new curve means a new organizational structure, a new way of organizing work.

And it is not about ChatGPT. ChatGPT is something that everyone is already using somewhat. It is not about ChatGPT. It is about what is called the AI agents. AI agents are literally artificial employees that you can put to work.

For example, there are already AI Agents that can write User Manuals for the products as they are being developed. There are already AI Agents that can write technical proposals. There are AI Agents that can learn the policies of the company and make decisions in its behalf, …

The way we work will be changing, the way we are organizing work will be changing, …. In the beginning it may look like AI is just augmenting our capabilities. But evenutally it will take over and start making decisions on our behalf. Efficiency gains may be gradual in the beginning, but then the time will come when the gains will be sudden step

function. And then, it will be too late if we are already not there. The efficient producer will eliminate the inefficient producer from the market place.

We may have been mainly concerned by technical competition, but what we must now be concerned about is organizational competition. The classical competition is usually on the same curve. Meaning that all competing companies compete generally on the same curve. But the companies that break out from the pack by adopting a technology of the next curve will devour all previous competition – even if they have a inferior products relative to the rest.



Companies that will not have incorporated AI Agents in their work will look like this relative to the rest.

. What will we be doing in Companies that are ran by AI?

by Rama, Engineering Association

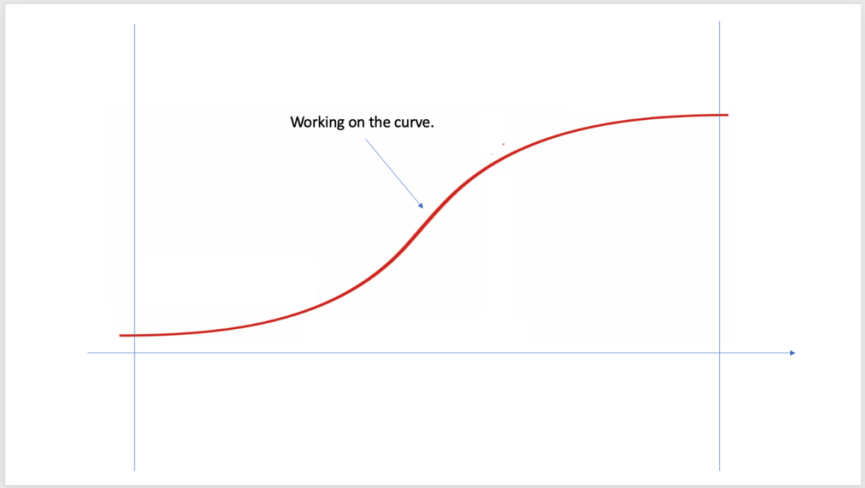
What will we be doing in companies that are ran by AI?

This is a question.

The quick answer is that we will have **lots of time** to spend on research and innovation.

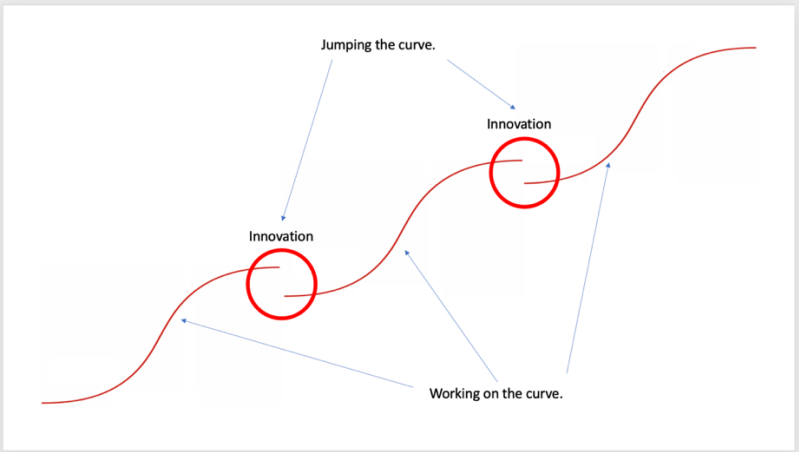
Let me draw this on the S-curves.

Traditionally, we spend most of our time on a given curve.



Pic. We spend most of the time on climbing the current curve.

And then, from time to time there is a major innovation, usually at the end of the curve, where we all must jump onto the next curve.



Pic. Innovation takes place when we jump the curve.

What will happen with AI is that the work that we usually do on the given curve will be delegated to AI.

But AI will not be able to create a new curve, the next curve. Creating a new curve needs human creativity.

So, we will have more time to spend on innovating new curves.

In short: we will be moving from mostly working on the curve to mostly creating new curves.

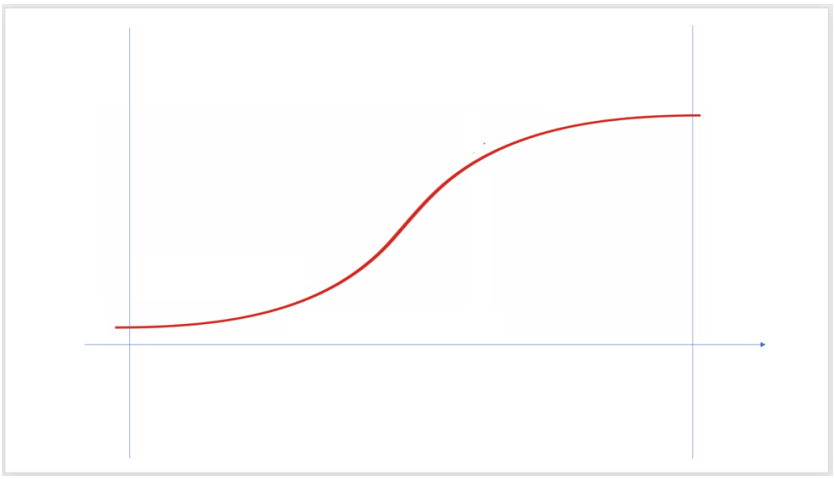
Thus, creativity will become the core of our work.

This opens a new horizon for humanity. Humanity has now a chance to reach its full potential – creativity. And this is the image of God who has created us in his image. If we look further down, we will be working on pure creation.

The competition will no longer be on the curve itself. The competition will be on how often can an organization create new curves and jump them. It will be about who can produce more curves. And this is all about creativity.

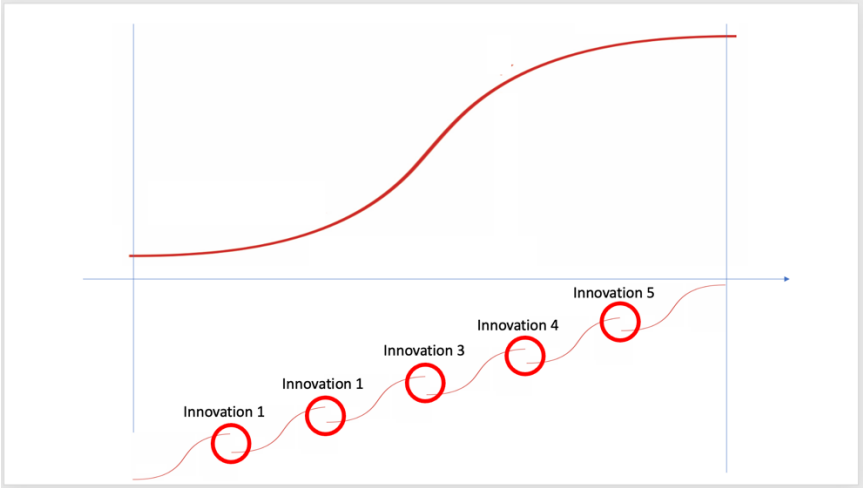
Education in schools and universities will be putting more emphasis on developing creativity skills, rather than just on knowledge.

Below is an image of an S-curve. It usually takes a long time from the start of the curve to its end.



Pic. The life of an S-curve in the traditional way may take a long time to reach its peak.

But now with AI, we will be able to create many new curves within the same time period as in the below picture.

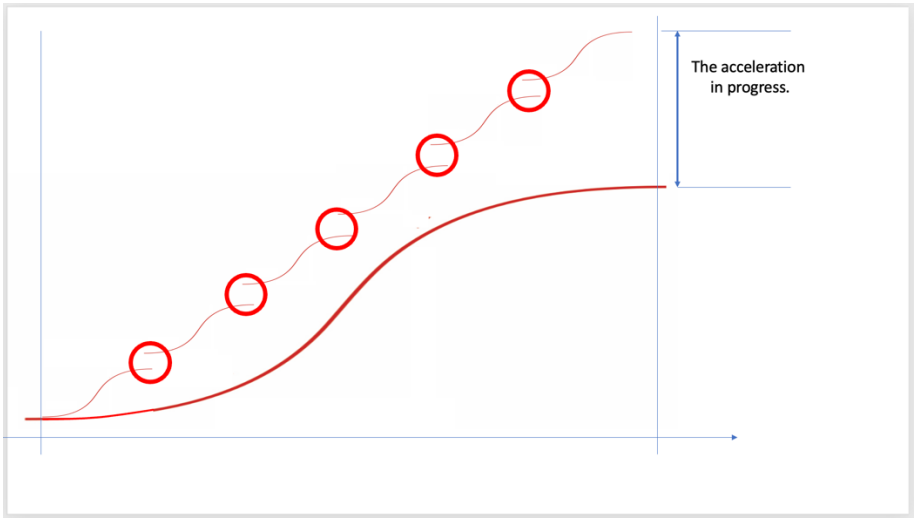


Pic When we are freed to spend much of our time to create, we will be creating and innovating more often. For the same period of time we will have the time to create many new curves.

And life in the organization will take the following shape:

Innovation – train AI on the innovation – New Innovation – train AI – New Innovation – train AI – New Innovation – train AI - ...

Not only will we innovate more often during the same period of time, but as a result we will have accelerated the progress as shown in the below picture.



Pic. Accelerating the pace of progress.

What do you think?

Do you agree with this outlook?

. AI in the EC

by Rama, Engineering Association

«ՉՈՒՇԱՆԱԼ, ԵՏ ՉՄՆԱԼ», –
ԱՅՍ ՊԻՏԻ ԼԻՆԻ ԱՄԵՆ ՄԻ
ՀԱՅԻ ՆՇԱՆԱԲԱՆԸ՝
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ՊԱՐՈՒՅՐ ՍԵՎԱԿ

There are already a few companies in the EC that are experimenting with AI Agents. These companies have already created internal groups of enthusiasts that are investigating with AI Agents. They will then champion the use of AI in their companies.

I think that by the end of 2025 most EC companies must have incorporated AI Agents in their processes in one way or another.

Would be good to create a community-wide AI user group to accelerate this process.

And soon we will realize that incorporating AI into the organization is not just a management thing. We will soon realize that every single person in the company must be able to create his own AI agents. Creating AI agents will be a skill as using email, using the internet, using excel. And once everyone can create AI agents, then everyone will have a whole team of AI agents working for him, which will free up his time for research and innovation.

Manufacturing Corner

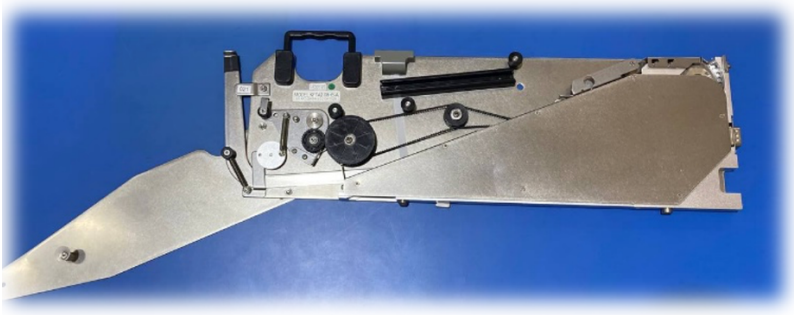
. Improving the SMT Production Line with a Custom TRAY

Zorik Markosyan (YEA Manufacturing)
Garik Harutunyan (YEA Manufacturing)
Vahan Poghosyan (YEA Manufacturing)



Pic. EC SMT Line

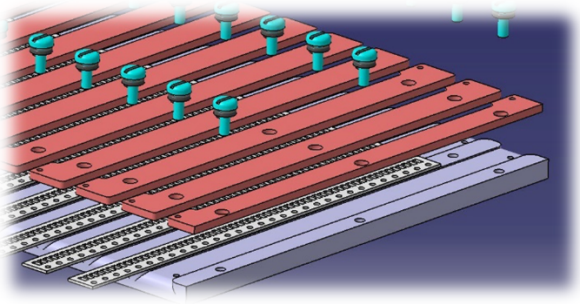
The level of the production line increased so much that at some point we started receiving projects of a much higher level than before. And to carry out the production we needed more Feeders.

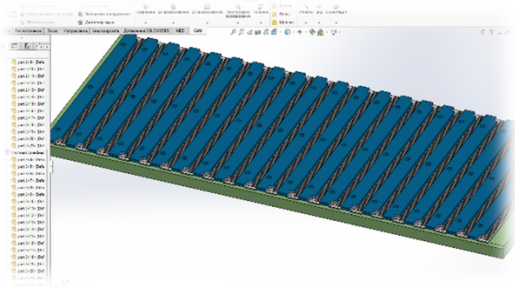


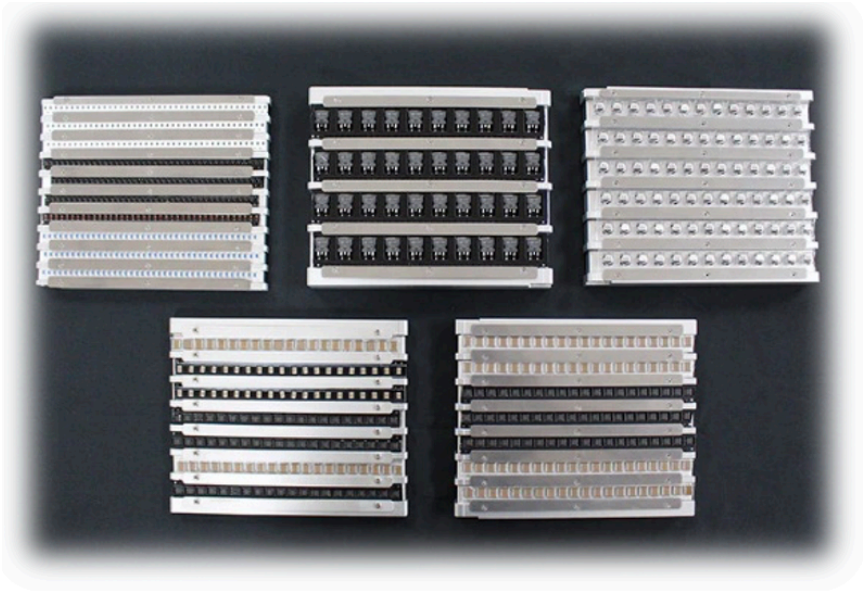
Pic. A feeder is a device that is used to install SMD components onto a machine.

It was necessary to purchase more Feeders, about 20 pieces, which cost about $900 each, and after consulting with Narbeh Nahapetyan, and studying various materials on the Internet, it was decided to design and manufacture a special device in house. We called it – the TRAY.

Our mechanical production team took up this issue, and in a few days, we already had 2 Trays with 20 places for components each.



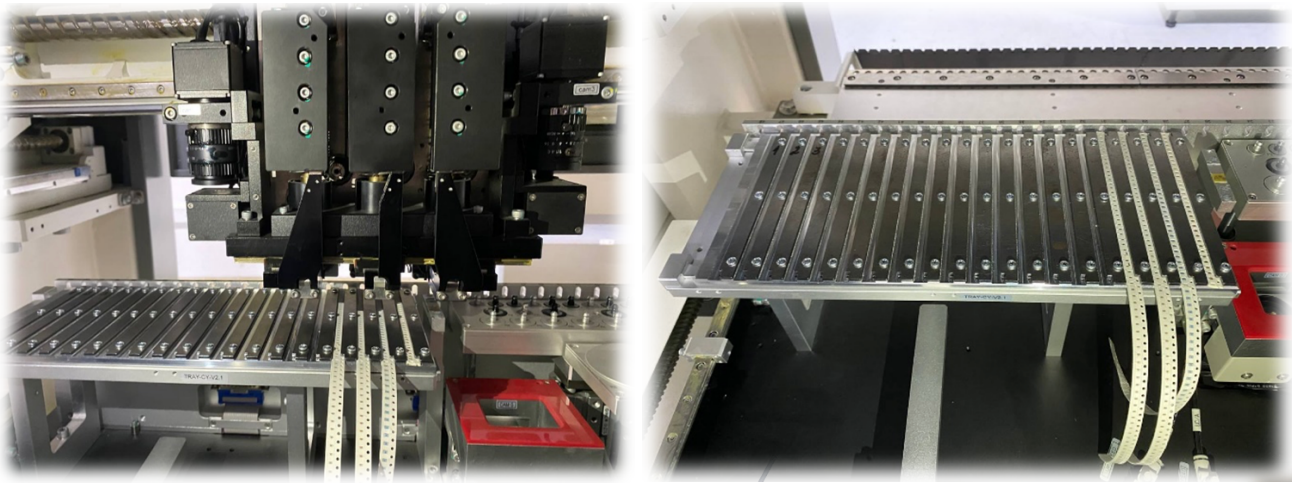




The product met all expectations from both a functional and financial point of view…

- With Tray, productivity and quality have increased as components are always fixed in place and this has resulted in component loss being reduced compared to feeders.

- As already mentioned, one feeder costs about $900 and so we were able to save $18,000 - 95%.



Pic. The Trays already installed in the SMT production line and working.

Given the above, it was decided to add a second location for another Tray, which is currently under development.

This will reduce the time that we spend on manual placing.



Musings

. Taking on the New Year with Bare Hands

by Rama, Engineering Association

It will be a challenging year this year.

Global and regional powers have not settled. The contradictions between the big interests have not been resolved. The world is still waiting for a new normal.

This year will be like a wild bull that is running loose.

It will take some strong hands to hold the bull back.

It can be done only together. It is such hands coming together that I wish all of us this year.



Taking on the new year with bare hands.

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