Augmented Reality on the Production Line

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Augmented reality (AR) is one of the most trending technologies associated with any Industry 4.0 or smart manufacturing initiative. No client says he's not interested in evaluating it and understanding what benefits it could bring to his company. Most of the time, any use case being considered is associated in some way with maintenance. This is a very low hanging fruit—not because it's easy to implement, but because it's easy to imagine what to do with it and it perfectly solves common maintenance difficulties.

Providing instructions that guide a user with 3D animated models on how to service a pump or with movies on how to disassemble or reassemble a device is useful, powerful and innovative. Superimposing graphical instructions on top of physical components to identify in the 3D space which screws you need to unscrew, buttons you need to push or switches you need to turn clockwise or counterclockwise can save a lot of time and errors, especially with inexperienced technicians.

Considering it an important opportunity, I wanted to test how AR could help an operator running a production line in his daily activities. In collaboration with a client, we started a pilot in the food industry, selecting three use cases not related to maintenance: key performance indicator (KPI) visualization, changeover instruction and traceability. The goal of the pilot was to understand if there was any value in giving an AR tool to the operator, and if this could facilitate his daily activities. We have just very early feedback at the moment, but there are some findings already that I think could be interesting to share:

1. Stay close to the real AR key characteristic. The differentiating value of AR is in how information is presented to the user. It's superimposed over the "reality." The values, icons or graphics are anchored to the real object they relate to. In a standard application, you would probably use a valve icon and an ON label to indicate the state of a valve. In AR, you just superimpose the ON label over the valve itself, which makes it easy for the operator to understand. If you just superimpose a flat table with values to the live image of the asset, you are losing most of the value you could provide the operator—giving him traditional information with a tool that is more complex to use.

2. Interaction with AR is more complex and time-consuming than with standard mobile apps. This is partially because of the concept of AR itself and partially because of the tools that are available today. We are at the beginning of a journey that will take time and effort. I strongly believe we are at the start of a no-return trip, but we probably have yet to leave the train station. A year ago, most of the AR demos were PowerPoint-based. Now we have several examples of applications developed using tablets and glasses. But there is still a lot of work to be done to make these devices really user-friendly, especially glasses. The interaction with the user is still somewhat unnatural and needs to be improved. It will not take much time, but some patience is required. So keep it simple!

3. Before considering the development of any app, ask yourself if you could do it instead in a more traditional way and what real value the new graphical interface will bring to the user. If possible, ask the user as well. Keep in mind that AR doesn't create information; it just delivers it in a different way. The technological overhead you are introducing needs to have a payback generated from how you present the information. Sometimes this is not really easy to estimate.

> AR is a great opportunity to change the way users interact with machines and production lines.

There's a huge potential for its use in manufacturing—not only for maintenance, but in production as well. But it's not the perfect solution for everything. It's nice and sexy to have, but it has to provide real value. Otherwise, it's just a Pokémon Go app.