Dedication - Integration - Open Source

New Rules in the Coating Industry (and in the progressive economy)

The essence happens in a thin layer.
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Currently three new rules bear on the market, characterizing modern branches of the world economy: Dedication – Integration – Open Source. These phenomena have been changing the tool coating landscape more and more progressively.

I Flexible dedication of products (to the application of your customer)

“The mass market is dead, replaced by the mass of niches” [1].

During the first two decades (1980-2000) of coated cutting tools the dedication of coatings to the applications’ requirements was not really possible due to the limited flexibility of the coating units, and was not wanted either. The big job coaters and the even bigger tool manufacturers limited the choices to some standard coatings, and they “distributed” them for a wide range of applications. This situation was perfect for mass production. Bulk quantities of tools were coated in big chambers, and sold at high profit margins. The picture changed with the appearance of flexible small and medium size coating units (at the beginning of the 2000-ies). The number of the available coatings exploded on the market (figure 1).

This surge was partly driven by innovative coaters, yet, first at all by the users. They recognized that dedicated coatings adapted to the application result in a much higher performance than the universal ones (e.g. figure 2).

Furthermore, in the case of integrated In-House-Coating, the dedicated coatings provide new and efficient marketing opportunities. Nowadays the tool geometries may be copied rather quickly, coatings, however, much slower and much more difficult. Therefore the marketing argument, “Everything, cutting material - geometry - coating, from one
Enabling customers to collaborate with you – in creating, distributing, marketing, and supporting products – is what creates a premium in today’s market” [1].

Job coating was very profitable, therefore more and more companies crowded to the market. Naturally the most of them are not interested in depositing many, different, “dedicated” coatings. They have to fill their large volume units, and therefore they have to coat the most divers tools and other substrates with a least possible number of differing coatings.

The job coating prices have continuously fallen due to increased competition. Contracted volumes have been diminished as former customers of job coating have changed into the harbor of In-House-Coating. The job coaters have had to accept their profits being cut.

Intermediate conclusion to “dedication”:

The trend towards plenty of niche coatings is so evident, that you tend to generate a Moore’s law for coatings...

2 Integration of new technologies (into the manufacturing process of your customer)

“We have shifted from an economy based on scarcity to one based on abundance. The control of products or distribution will no longer guaranty a premium and a profit.

Figure 2: Hobbing with conventionally and dedicatedly coated tools.

Figure 3: The two different basic procedures of tool coating.

The own, integrated In-House-Coating used to be a privilege of big tool manufacturers for a long time. All the others were serviced by the distribution networks of the initially few job coaters (figure 3).
What is innovation? Innovation is “having created something new”. This term, unspecificly used, applies to new ideas, inventions, and their economical implementation.

The most innovative sector at the moment is undoubtedly the IT industry. It is launching new products at a very rapid pace. Two companies, whose company policies couldn’t be more different, are currently battling for leadership in the sector [4].

- The one works within a closely knit hierarchy, under strict, central guidelines and controls, applying a high-end pricing policy for hardware and software.
- The other focuses on openness, self-motivation and free of charge services. This situation is very similar to the tool-coating market. The market leaders have been focused on job coating wants to take over control into own hands. The job coating market grows in the low-tech area only, where the quality is more important than the quantity, hence mainly in China.

Intermediate conclusion to “Integration”:

Hand over control to your customers - or you will lose them! [1]

3 Open sourcing your know how (to share it with your customer)

“Owning pipelines, people, products, or even intellectual properties is no longer the key of success. Openness is “[1].

[Figure 4: What is important for the users of coatings? The 10 most important criteria. Importance: rising from 0 to 5 – IHC: In-House Coating.]

The compositions and stoichiometries (coating structure) are disclosed (figure 5).

- The effects of the individual “components and doping elements” are described in details.
- Apart from coating compositions, cathode configurations that are used for manufacturing the respective coatings are disclosed as well.
- The users receive measurement values and diagrams on the coatings they are using.
- The coating recipes may be modified/adapted by the users (according to the motto of Open Source principle: Everyone knows what’s best for himself).
- The standard recipes of the NanocompositeTripleCoatings® are “core components” of the PLATIT plants, and are thus free of charge for the users.
- The members of the TripleCoatings®-coating family are tesserae (Lego bricks), that have been developed systematically, as Open Source. Figure 6 represents the current state (Jan/2011).

Open Sourcing does not mean the supplier opens all his secrets to his customers - the algorithm of the system software or the internal design of a coating cathode. However it means he supplies complete turnkey systems [7] enabling the customer to create new products (e.g. new dedicated coatings, and this with or without the supplier’s help).

PLATIT starts the Open Source activities not from grace of charity, but;
- In the interest of the rapid spreading of the TripleCoatings® all over the world.
Therefore users should not hesitate to use these High-Tech coatings. They should not waste time and performance by sticking to conventional coatings, like TiN & AlTiN & Co.

**Intermediate conclusion to Open Source:**

“In the course of 40 years, I have not yet seen that closed systems have held their own against open systems”, states the famous Swiss supporter of Open Sourcing, the Logitech-founder, Daniel Borel [5].

**4 Summary**

Nowadays the progressive economy (the coating industry is being part of it without doubt) can be characterized by 3 new rules:

- Tailored dedication of the products to their application,
- Direct integration of new technologies (e.g. coating) into the manufacturing process, so far outsourced to job coaters and,
- Full openness to transfer the know-how of the new technology to the user.

**References:**

[1] BuzzMachine by Jeff Jarvis;
www.buzzmachine.com
[5] Real Open Source;
www.zwahlen.ch

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