

Fig. 1 Labuda-Rotation-Wiping-Simulator for capturing the particle abrasion of textiles.

Cleanroom technology, like other high-tech industries, is subject to constant change. With the rapid development of products and services, the people whose names we associate with cleanroom technology often change, too. In one company, however, this is not the case: Clear & Clean GmbH with headquarters in Lübeck. In an interview for the technical journal GIT ReinRaumTechnik Dr. Heiko Baumgartner spoke at SEMICON with Win Labuda, a bedrock of the industry.

Passion for Cleanroom Technology

*Heiko Baumgartner,
Win Labuda*

Mr. Labuda, as founder of Clear & Clean GmbH, you experienced first hand the beginnings of cleanroom technology in Germany. What gave you the idea to make auxiliary products for the cleanroom industry?

Labuda: The actual starting point was a visit in 1973 with Mr. Edward Paley, the founder of the American company Texwipe, Inc., long before cleanroom technology became established in the U.S. He said: „The structures of a number of high tech products will continually get smaller, but the physical dimensions of the contaminants in the production environment will stay the same. Until the end of the century, great new industries will evolve from this discrepancy.“ The idea fascinated me; I flew home and from this hour on, cleanroom technology and surface cleanliness have become a passion for me. The visit transformed my life. After that I represented Texwipe until 1979, and then in consensus with Siemens AG, I founded a production facility for precision cleaning wipers in relative proximity to their location.

Although you were first on the market here in Europe, you hardly did anything to counter an opening of the market and therefore you had to be content with a more modest growth. What were the reasons for this?

Labuda: Well, at first we certainly didn't have enough capital to entirely occupy the market, which at the time was becoming more vigorous. After all, our company employs 15 people, whereas our competitors in the U.S. are considerably larger. But in the succeeding years, too, we only accelerated our exports to a limited extent. That was perhaps a strategic mistake. But the main reason is rather of philosophical nature. Besides achieving adequate economic success, I wanted to have enough time for research. Doing research in an admittedly small but highly interesting field - this penetration into a microworld - had fascinated me for a long time. You must consider that the world outside of our human focus consists of a macrocosmos and a microcosmos. According to definition, we human beings are somewhere in the middle zone. When you go in the direction where things get smaller and smaller, however, there is a world that corresponds to the infiniteness of the macrocosmos. I wanted to get to know this world better, and that takes time. At first it was difficult for all of us working in the field of cleanroom technology. For many products we had to develop a testing technology. For precision cleaning wipers for instance there was not one single useful testing method. In the meantime I have introduced four testing methods that are specifically developed to obtain quality data of a cleanroom wiper.



Abb. 2 Win Labuda, 2002

Hasn't the great amount of time and energy you put in at Clear & Clean for research and development slowed down the expansion of your company? Is it really necessary to invest so much scientific commitment in the field of wipe cleaning applications?

Labuda: During the last decades we have conducted many highly interesting studies on wipe cleaning in our research laboratory, using our modern test-equipment which range from a scanning electron microscope to ellipsometry. This has led to a better understanding of the microworld of wipe cleaning in general. Today we are able to measure the thickness of surface contaminants consisting of a single molecular layer. Just think what that means: one molecular layer! Perhaps the amount of time and energy we spent on research has slowed our growth somewhat. But our research has not only satisfied our striving for more insight; these findings have helped us improve our products decisively and to develop absolutely new products. „Enhanced usefulness through good ideas“ has always been my motto. For me, research has always been synonymous with quality of life. For that, no night is too long or any way too difficult. The same is true for my wife Yuko. Wipe cleaning is always associated with an expenditure of time for the user. Therefore it is worthwhile to do research and develop products which produce the same or a higher level of surface cleanliness with less expenditure of time or which make surfaces cleaner than they could ever have been previously. That is really a fascinating task. And if we don't then make as much money as we probably could, we are more than rewarded by this enhanced quality of life.

Does the market honour these greater research efforts and the high costs of product improvements?

Labuda: Of course, first of all it is important to document the advantages and the enhanced use of a somewhat more expensive product. We have done that in many scientific publications, lectures and documentations in which we have described precise, reproducible measurements available for everyone. Here, too, our collaboration with renowned university institutes has proven to be useful. We also invite engineers and technicians from users to us in our laboratory to conduct comparative tests of products themselves. Many have made use of this offer and assimilated new knowledge of the products. Neutral and scientifically verified comparative studies are always arguments that are not easy to brush aside if the user is prepared in principle to follow a sensible argumentation. In most cases, better product

quality of a cleaning wiper pays off by saving time in the cleaning procedure or through a higher degree of surface cleanliness. Even non experts can discern product advantages by means of simple tests, e.g. cleaning trials with a contaminated black plate. That is convincing and, once people have been convinced, they will honour our efforts with their orders.

When one compares your product portfolio with those of suppliers of complete packages for the cleanroom, it is striking that you concentrate on manufacturing comparatively few products such as cleanroom wipers, papers and gloves. Wouldn't it make sense in your view to complete the range of products in order to act as a contract supplier, for example?

Labuda: My desire has always been to work only on those products for which we have the time and competence to completely understand, and to develop them to new heights of perfection. Healthy growth, just like unhealthy growth, first takes place in the mind. Too many products inevitably decrease the intellectual depth of penetration of the individual product. A contract supplier cannot have full technical expertise with a range of 100 products. That is why I am rather sceptical, as you know, toward contract supplying.

But doesn't contract supplying offer cleanroom owners many advantages at the purchasing level, such as simplification of the work process, more flexibility, independence from demand cycles and a reduction in personnel costs?

Labuda: The idea itself is temptingly plausible, but as so often, the problem lies in the details. The advantages attributed to the system of interesting purchase prices when buying a package from contract suppliers are often lost due to the increasingly specialized requirements of the individual user. Work is made easier merely for the purchasing executive, and that is simply because he only has contact with one supplier. In the long term, that of course also leads to a narrow focus. But there are a number of additional serious disadvantages. Particularly, an intensive dialogue between the technicians of the user and the manufacturer is necessary to ensure an ef-

fective further development of products. This dialogue often suffers because of the detour via the contract supplier.

Even with contract supplying, in my opinion, market forces have the same strong impact. At most, the contract supplier can hold them at bay for a short while. With decreasing quantities purchased, for instance the price rises even within the framework of a supply contract. Also the argument of lower personnel costs does not hold in my opinion. The costs are only restructured. The user of cleanroom products must naturally pay 10-15 % of the total purchase price for the additional personnel costs, the management and the contract supplier's profit. I think that direct supply with a good buyer is the solution with the better value, even if there is a perfectly good example, such as Infineon in Dresden and its motto „contract supplying yes, but we choose the product“.

Does Clear & Clean supply contract suppliers on a large scale?

Labuda: Yes, but without much enthusiasm. That is mainly because contract suppliers in Germany have a dual function. On the one hand, they are importers of some foreign cleanroom products; on the other they do contract supplying because of the long-term order assurance involved with it. This dual role naturally encourages not taking product neutrality too seriously. At any rate, no contract supplier buys a Clear & Clean product voluntarily, but rather solely because of pressure from the user, and this situation explains why we are so reserved.

What innovations are in your programme for the CLEANROOMS 2002 trade fair and what can be expected in the future?

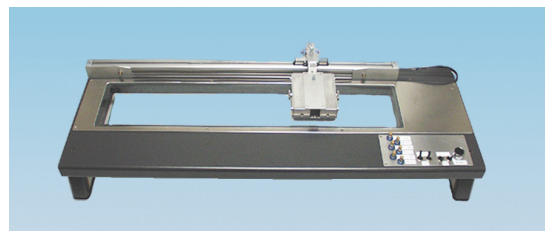


Fig. 3 Labuda-Linear-Wiping-Simulator for capturing the liquid residue after moist wiping procedures and for the photographic documentation of dynamic liquid uptake.

Labuda: From July on the production of our recently patented glove wiper GRIPFOLD™ is planned. That is a combination of glove and cleaning wiper for use in clean areas. The product offers the advantages of a high tech cleaning wiper with a considerably larger effective cleaning surface resulting from the possibility of stretching out the hand surface during the cleaning procedure. We will even have sterile wipers in our Programme. There will also be a SONIT™ MD-A wiper, an absorption wiper for larger amounts of liquid - for

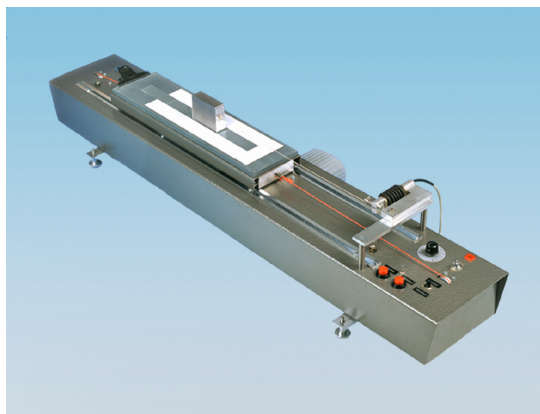


Fig. 4 Labuda-Linear-Wiping-Simulator for capturing the cleaning efficiency of cleaning wipers.

instance in the liquid chemical sector. In a long-term project we are dealing with wiper fibrils that have lasered structures and show interesting particle bonding characteristics within the framework of charge phenomena on the fibre surface. In the field of testing technology we have started working with a highly interesting instrument with which the liquid residue in moist wiping can be measured reproducibly. In addition, the dynamics of the liquid uptake of the most diverse cleaning wipers can be documented photographically, exactly as can the remaining contamination on the surface.

Your wife Yuko was trained to be a concert pianist. How did you manage to make her director of a „research company with added manufacturing facilities“?

Labuda: My wife comes from a family of Japanese scientists. Her father is a mathematician, her brother a biologist. When we got our first electron microscope and nobody knew

how to work with it, my wife was the one who made the first pictures, to the surprise of all of us. She worked in our Laboratory for 10 years before she became managing director. Now she has the company well under control, and today I only have to concern myself with research.

In 2000, together with your wife, you founded the Lübeck Cleanroom Technology Symposium. What is the objective of this biennial event?

Labuda: The aim is to give clean-room- engineers and scientists in German-speaking countries an intellectual home. Also it is to promote the exchange of ideas across various industry sectors and to facilitate personal contacts among the participants. My wife generously agreed to bear the basic costs for this event and therefore the invited guests do not have to pay any fees for participation. From my work on the VDI (Association of German Engineers) guidelines committee concerning surface cleanliness, I bring experience from a number of similar events organised by the VDI, which lately has not been very active in our field. This year's Lübeck Symposium begins on September 24th, and a number of high-carat lectures have been announced. I hope many participants will come to us in Lübeck, and we will give them a warm reception, as is our custom in the old Hanseatic cities.

In your essays you often mention the subsequential costs of using wipers. What does that mean?

Labuda: Please consider that a large clean-room facility has an annual demand of e.g. 1 million cleaning wipers. This means that an employee uses each of these wipers for approximately 1 minute. And if a wiper of a lower efficiency must be used for two minutes until the relevant cleaning procedure is finished, then that is 1 million minutes more than with the comparable product from Clear & Clean. With average workplace costs of \$ 0,90/minute, this difference in cleaning-time amounts to precisely \$ 900.000,- a year. That is what Clear & Clean wants to say: the possibilities of reducing manufacturing costs for cleaning procedures are first and foremost in the area of time costs. Those are the subsequential costs. What you can save there using intelli-

gent solutions for wipe cleaning is many times the additional costs that intelligent solutions involve.

If you were allowed to express to the German user one wish that would be fulfilled, what would that be?

Labuda: I would wish the German user more insight into the fact that the hesitant use of innovative products really reduces our Innovation tempo in general, because the innovative entrepreneur here in Germany can only pay off the Investment in his innovation relatively slowly. On the other hand, innovation is the motor of all economic progress. The whole thing has something to do with basic trust: in Germany, everyone first wants to take a very long time testing before using a new product, and since they often don't have suitable instruments at all or sufficient testing experience, they postpone the whole thing and don't do anything. The Americans are far less inhibited in taking responsibility. They believe the expert much more readily than we do. Here that's called naiveté, but in reality it is a great strength .

Mr Labuda, next year you will be 65 years old. What are your future plans?

Labuda: I would like to pass on my technical-scientific experience in the field of cleanroom technology to the next generation if someone can be found possessing the primary virtues of competence, decision-making ability and responsibility and who would like to make use of my experience. In addition, in the course of my life I have created an extensive graphic and photographic oeuvre. This I am now going to publish. Last year I started making bronze sculptures. Then there is also my work as a producer in the field of classical music. In March of this year I was selected to be president in the jury of a renowned French chamber music competition. Besides, I will certainly not simply stop doing research after my birthday. As you see, there is still so infinitely much to be done. At any rate, I would still like to experience the special issue of ReinRaum-Technik you intend to dedicate to me on the occasion of my seventieth birthday.

Translation: Carol Oberschmidt