



Hind Beaujon, Head of Market Segment Coating, Pfeiffer Vacuum explains to PES the importance of China to the vacuum suppliers and the different emerging developments.



Hind Beaujon

PES: Welcome back to PES Solar/PV magazine. Thanks for talking with us. For the benefit of our new readers would you like to begin by explaining a little about the background of your organisation and how you currently serve the solar/PV industry?

Hind Beaujon: Pfeiffer Vacuum is a leading company in the field of vacuum technology. Indeed vacuum is very critical for key enabling processes serving major industries that transform our daily life such as, telecommunications, connectivity, energy, medical, food, research and development... to list but a few.

We have been active in all the above sectors for more than 125 years and we are continuously improving our industry knowledge and applying it to new applications, to provide the latest vacuum solutions servicing these key industries.

It is just a natural move to develop our activities in key, vacuum emerging industries like Solar, LED and AMOLED which have gained momentum in the last ten years.

PES: You are active in a number of industry sectors. How important is the Solar/PV business in China to Pfeiffer Vacuum?



In regards to solar, 2016 was another record year for installations world-wide and particularly in Asia. Over the last two years we have seen a strong development in the Southeast Asia Region of Malaysia, Vietnam and Thailand. These emerging regions have aggressive plans in term of solar panel manufacturing and installation, with a strong investment from key Chinese companies. So in 2016 we saw a new manufacturing footprint emerging. But China still remains a leading region in terms of investments and drivers.

PES: Are you seeing more interest in your solutions for thin-film or for wafer based applications? Perhaps PERC?

HB: Since early 2016 there has indeed been a rising interest in innovative vacuum solutions to address the new technology trends and this is driven by the investment forecasted in CIGS thin film and the PERC for the wafer based technologies.

PES: Why do you think this is?

HB: As previously mentioned, the solar industry is facing challenges and competitiveness issues. The key players, despite the industry pick-up, are still struggling with low margins in regards to panel prices. So, the first top players are definitely looking for ways to differentiate themselves and this can only be accomplished with technology. Both technologies including thin film and wafer based have been going through this in the past year.

Key investments are focusing more and more on technologies allowing panel efficiency improvement, CIGS for the thin film players and PERC for the wafer based. The PERC is expected to gain a market share in 2017 of more than 30% of the total shipped panels. While the CIGS thin film is still project driven and will be a focus for players mainly in China.

So we are definitely entering the second development stage of the solar industry in China where we are looking into performance and cost reduction by technical differentiation and improvement. Here is where key players, like Pfeiffer Vacuum, have an important role to play.

PES: Are you able to tell us of any key product introductions or innovations since we last spoke?

HB: 2017 will see the introduction of a new large capacity dry pump, the A3004H which completes our dry pump product portfolio providing a competitive solution in the range of 3000 m³/h. The second product is the newly redesigned Hipace 2300 Turbomolecular pump dedicated to solar and coating applications.

PES: What are the advantages, both in technological terms and for the end user?

HB: Pfeiffer Vacuum solutions for both dry pumps and Turbomolecular pumps are key components allowing the achievement of required vacuum conditions for the crucial steps either for PERC or CIGS Manufacturing:

For the PERC, we see the emergence of processes addressing the new AlyOx layers either by CVD or ALD. For these processes, the vacuum performances and dry pump capabilities are key in allowing cost effective manufacturing. Pfeiffer Vacuum's new A3004H high capacity process pump is in a good position to play a role in this area.

This dry pump will provide the highest performance 50 Klpm pump at the lowest CoO under process operation in the market. The lowest base pressure in its category due to its newly designed, two stage blower combined with the highest performance in high flow operations, critical for the CVD process windows, makes this pump superior.

With regards to the CIGS processes, the selenium deposition is a critical step and our newly redesigned Hipace 2300 pumps provide the necessary performance and robustness.

PES: Are there cost implications in using this method?

HB: As I said previously, the solar industry is a highly competitive environment. All our new development challenges are focused on combining performance and cost efficiency. Our customers, most of the time, are looking for CoO (Cost of ownership) as a critical parameter for vacuum supplier selection.

Our new pumps are two products that will definitely bring value to solar players, combining the technical performance mandatory to this emerging manufacturing technology and the cost advantage in a highly competitive industry.

PES: Speaking from a global standpoint, which geographical regions do you anticipate being important for Pfeiffer Vacuum as we move into 2017?

HB: As a global company, Pfeiffer Vacuum is taking part in major investment projects in both thin film and wafer based technologies. These projects are mainly Asia driven investments, but we still have a strong equipment base in Europe - in particular in Germany, which contributes strongly to this business and will continue through to the end of 2017 and beyond. This year there will be a strong focus on development in South East Asia, Vietnam, Thailand and Malaysia, followed by India.

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HB: As I said before, the solar segment has been a focus for Pfeiffer Vacuum for the past 10 years. Of course, as you may know, this industry is still under development and still facing lot of challenges: industrial and technical. These are forcing a number of consolidations and up-down cycles.

Despite these challenges, we do believe in the long term development of solar and our organisation is committed to supporting the industry growth and of course taking part in it.

PES: Which of your solutions are the most in demand in the Chinese market and Asia as a whole?

HB: The market in China for vacuum suppliers represents one, if not the highest growth potential. The major segments that are driving this growth are display, solar, LED and architectural glass coating.