

The Brush Expert 2020 SHOW NEWS

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# ZAHORANSKY - new machines, systems and technologies

## New products without corners and edges

**Z**AHORANSKY shows its capacity as a leading full-service provider and partner to the brush industry with a variety of new machines, systems, and technologies. The focal point is the debut of the revolutionary CUBE, a completely new design of machine for the production of anchor-tufted toothbrushes. The three-part modular structure, consisting of a base unit, supply unit, and cover unit, is clear to see from the very first moment you lay eyes on it. When used in conjunction with the coordinated, newly designed ZMI 4.0 machine control system, the CUBE can really show off its technical strengths while setting new standards, enabling both parallel and serial production orders to be processed without the need for changes to the mechanics. By simply loading an appropriate program, several toothbrush models with different designs can all be produced on the same machine – and all without interruptions: when using a CUBE base unit, the output is 40 brushes per minute, increasing by another 40 if you connect a further CUBE base unit, and so on. The advantages of ZMI 4.0, such as a smoother activation of machine components, also increase the performance of the Z.SAILFIN and Z.LYNX 3 models: Z.SAILFIN's output increases by 12 percent, meaning it can produce 95 brushes per minute instead of just 85 per minute. The completely redeveloped Z.LYNX 3's output also almost doubled (depending on the brush model) thanks to ZMI 4.0 – from four to up to 7.5 brushes per minute (an increase of 85 percent). Also new: the Z.RAY, designed for the production of wooden toothbrushes, and the revised Z.PARD, which now features improved ergonomics.

Robert Dous, Head of Sales/Marketing, is looking forward to seeing the reactions of the customers: "It gives us great pleasure to finally be able to show our new machines, systems, and technologies to both the market and our customers. Above all, the modular structure of the CUBE clearly shows our approach to toothbrush production has been logical and well thought out, and that we have been able to implement our ideas on a technical level. In short, all of our new products offer our customers more space in every respect – from the lower space requirement placed on the production hall to the greater potential when it comes to implementing the customer's design ideas, right through to more flexible scaling of the number of units."

### CUBE: the utmost flexibility in the smallest of spaces

The modular basic design of the CUBE allows for toothbrush production with the utmost flexibility and efficiency in the smallest of spaces: in line with the versatile CUBE

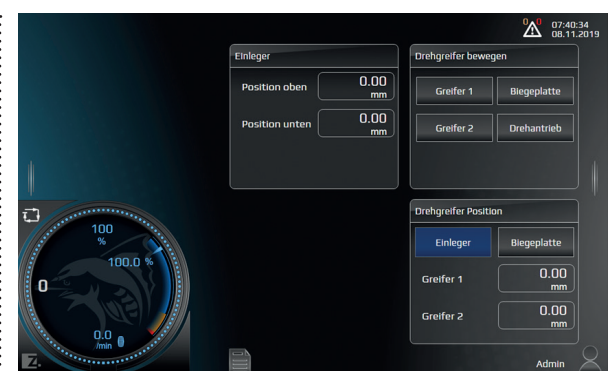


Above: Z.LYNX 3

exhibition system, an equally novel, flexible feeding system for handles made of bulk material will also be showcased. Like the CUBE itself, this feeding units can be scaled accordingly in terms of the number of handles required. Optical camera recognition of the handle shapes ensures easy conversion to other models, which in turn guarantees you flexibility. The handles are inserted via the CUBE Supply Unit into a Carrier Transport System (CTS).

Via the CTS, the handles run through CUBE base units to the individual processing stations like tufting, trimming and final endrounding. There is also the option of integrating additional devices, such as imprinting devices or cameras for quality assurance. The finished toothbrushes are then removed from the CUBE by a robot and placed in the correct alignment on a transport belt. At the end of the belt, the brushes are deposited in a tray for further/final processing in a packaging system such as the Z.PACK.

Other base units can easily be integrated into an existing CUBE in order to increase the volume of brushes being produced or to adapt to new market requirements being placed on toothbrushes. When integrating these new base units, the order in which the tufting and finishing units are placed can be flexibly adjusted. When it comes to complex trimming topographies regarding the toothbrushes



Above: ZMI 4.0: the smart machine controller

(trimming height/depth), for example, the low filaments can be tufted and trimmed first before the higher ones, without the need for complex spreading processes that would otherwise be required. The CUBE is particularly flexible when it comes to processing: for large quantities, a "parallel mode" is available, with all CUBES producing the same brush model. For models with large/small holes and deep/high bundles, serial operation can be activated – simply by importing the respective program into ZMI 4.0. In addition to the performance values of 40 brushes per minute/base unit, the tufting speed could be increased from 1,000 to 1,200 tuft/s minute. And it's not just its inner values that make the CUBE a compelling product. ZAHORANSKY has come up with





something special for the customer regarding delivery and installation: as the electronics and control cabinets have been moved upwards, the machine takes up a lot less floor space. Thanks to this development, each CUBE can be delivered to the customer ready for operation in a container – longer on-site assembly times become a thing of the past, the machine can start being productive more quickly, and less space is taken up in the production hall. In addition, the front, which is clear from the operator's point of view, increases operational efficiency and provides greater accessibility for maintenance work.

## ZMI 4.0: the smart machine controller

The completely re-programmed Zahoransky Machine Intelligence (ZMI) 4.0 is now even smarter and geared towards the needs of the worker: with intuitive touch controls, complete with new icons and wizards, it can be used to operate machines fitted with the system (currently CUBE, Z.SAILFIN and Z.LYNX 3) without much training; this is because the programming is based on previously defined modules for specific mechanical movement sequences. By way of example, test users were able to program trimming profiles five to ten minutes faster and thus start the machine five to ten minutes earlier. As part of this process, ZMI 4.0 takes the subsequent operational sequences that should logically follow into account – this helps to minimize operator errors. Should the operator have any questions or be uncertain of anything during operation, the "Help me" wizards are on hand to suggest suitable solutions. The integrated service mode also simplifies international support because it breaks down language barriers, with a unique ID number being present in every field (such as the filament feed settings) on the display. In case of enquiries, the operator only needs to mention this number. This makes it quicker and easier to isolate an error in the event that support is required. In addition to the new operating concept, ZMI 4.0 has also been able to make quicker and more precise actuation times for the servo drives a reality. This is enabling machines such as the Z.SAILFIN to work more quickly and more smoothly, which is reflected in a higher output: instead of the previous 85 brushes, 95 can now be produced per minute. The control center also benefits from greater transparency: the production figures are visualized and can be tracked over certain periods.

## Z.LYNX 3: redeveloped for greater performance

The Z.LYNX 3, designed for the production of twisted-in-wire brushes, was redeveloped from the ground up. The focus of the revised machine concept was the switch to parallel production. Previously, the production process

involved completely finishing one brush before moving on to the next one. Now the production process involves manufacturing half a brush at one station, while further/final processing takes place at the next station. Depending on the brush model, this can increase output by up to 85 percent – from four to up to 7.5 brushes per minute. This increase is facilitated in no small part by the aforementioned smoother motor control afforded by ZMI 4.0. Despite the increased performance data, 1 to 4 mm thick stick wire are still able to be processed, only now the process is much faster.

## Z.RAY: manufacture wooden toothbrushes precisely and hygienically

Another new product is the Z.RAY, which can be used to produce trendy wooden toothbrushes. To ensure the utmost standards of hygiene, the

holes in the handles are drilled in a separate unit and within a protective screen at a rate of up to 800 holes per minute.

## Z.PARD: new design improves workplace ergonomics and processes

The new protective housing immediately catches the eye, but it's not just there to improve the machine's appearance: based on feedback received from numerous customers, the swivel arm with the screen is now attached at the top instead. This leaves more floor space for pallets with filaments or brush baskets – ideal in cramped production environments. In addition, the housing was set slightly lower in the insertion area. The worker can now step closer to the machine when loading or unloading material, which helps to prevent fatigue and incorrect posture. A new LED bar with traffic light function also ensures better visualization of the current operating status. In addition, new handling handover to a Z.RP machine for finishing the brooms will be on display at the trade fair. This handover automates the manual tufting machine's entire process. The worker removes the finished brushes from the Z.PARD, places them on the belt magazine, and a cobot (collaborative robot) takes care of removing them and placing them in boxes once the rounding process has taken place. The robot will detect when a box is full. It will then switch off the machine, pull the full box towards the worker, and move an empty one into the vacated filling area. The worker can then place the brushes in storage packaging. Without having to bend down, as the boxes are positioned at waist height.

**More information and further innovations are available directly from ZAHORANSKY, please get in touch. [info@zahoransky.com](mailto:info@zahoransky.com)**



Above: Z.SAILFIN



Above: Z.PARD