

“A revelation”

Industrial kitchen aid for asparagus peeling



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What is delicate, tasty and healthy all at the same time? The answer is asparagus, the preparation of which is however laborious and expensive. The reason is the time consuming peeling. However, help is at hand in the form of a pneumatic asparagus peeling machine, which goes through the asparagus, be it thick or thin, until the last bit of skin has been removed.

Mid April to end of June is the asparagus season in these parts. This a time for gourmets, whose mouths water at the sight of this noble vegetable accompanied by ham, butter or Hollandaise sauce. And yet there is one drawback with this sought-after delicacy: the laborious task of peeling prior to consumption!

All that remains is to set to work with the customary peeling using a knife. The direction is always from the point to the end “think, even and not a bit to be missed” is the motto for peeling. Then the end piece is cut and this vegetable of kings goes into the pot.

An ingenious idea ...

... was what the company Hepro GmbH came up with in the form of an automatic asparagus peeling machine, whose patent rights have been secured since 1994. This machine represents a valuable kitchen aid to professional chefs and can peel up to 3600 shoots per hour, i.e. one asparagus per second. Purely from the time-saving aspect, the installation works 10 to 20 times faster than man, depending on skill and experience. From the weight angle, up to 120 kg of peeled asparagus are achieved by the hour, with asparagus diameters possible from 8 to 32 mm. Even the occasional unsorted insertion of crooked



shoots presents no problem; and most important of all: The asparagus tip remains untouched and intact.

Eight knives at different angles to the asparagus shoot remove the thin layer which counteract this gourmet's delight. Whereas manual peeling results in almost 33 % of peel waste, this is reduced to less than 30 % with the automatic cutting machines. The asparagus is fed past the knives via conveyor rollers. The accumulated peel is rinsed off with water and collected in a peel container. The finished product is transported to a collecting basin.

Peeling with pneumatics

The asparagus shoots are fed towards the machine manually, whereas the actual cutting process is technically highly advanced. The actuators are controlled by means of a small PLC from Mitsubishi (see "Continuous Flow" article). Fruit acid resistant light reflecting sensors detect the position of the asparagus shoots and do not release the knives until the tip of the asparagus has passed. Self-cleaning conveyor rollers with contra-rotating guiding grooves retain the asparagus during motion. Hepro started with the development of these systems eight years ago and pneumatic com-



ponents already featured in these. Small cylinders carefully guided the knives towards the asparagus, whereby the action of impact during contact initially released the peeling elements. All in all, three phases of development were necessary until the solution of a perfectly functioning peeling machine was achieved. The problem was solved using a special spring/piston rod design from a special design series by Festo enabling a uniform peeling action to be achieved. Further special characteristics also feature on the side of pneumatic activation: Whereas small valves were used initially for individual activation, installation-saving CPV valve terminals with two pressure zones have in the meantime become generally accepted. An optimum peeling result is achieved by means of different operating pressures for the knives. At the front, the knives are applied to the asparagus at 4.2 bar, whereas 4.0 bar are adequate at the back. A pressure change-over for the peeling of thick or thin asparagus shoots is also facilitated.

Asparagus handling with a future

The technical advice, the high level of customer awareness amongst asparagus growers as well as ongoing project support smoothed the path for cooperation between Hepro and Festo, which can also be sustained on an international level. Asparagus growing regions outside Europe, such as Peru and China are still waiting for this "kitchen aid" and even



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the waterless universal peeling machine has worldwide potential. Gherkins, salsify, radish and carrots grow everywhere and interest in these two automatic peeling machines exists not just in the food preservation industry.

The latest development is also based on the system described above. Image processing is used to automatically sort the asparagus. The camera detects the length, thickness, curvature and colour of the asparagus within seconds and sort the shoots into up to 16 quality categories. Up to 6,000 shoots are sorted per hour, requiring a maximum of four operators. Asparagus peeling has in the meantime become a lucrative sector of industry for Hepro. □



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- 1_ Vegetables for a gourmet's delight:
A delicious asparagus dish
Photo: Report – Bilder-Dienst
- 2_ Compressed air feeds the system,
which peels all types of asparagus
- 3_ Eight double-sided knives completely peel the asparagus
- 4_ Knives slice through the air: A closer look reveals the pneumatically actuated knives