



TECHNOLOGY

Detailed Information

CAPACITOR TECHNOLOGY

Free Margin Oil Evaporator

Remark: The free margin oil evaporator according to this information is an intellectual property right of Leybold Optics. Status of the development “patent pending”.

Introduction

The free margin oil evaporator is used to process continuous, non-metalized margins with a constant width in machine direction. The quantity of margins in transverse direction and the width of the margins depend on the respective product. The principle of margin generation is based on direct oil transfer via evaporation and condensation on the film. Provided that the quantity of oil is well adjusted, deposition of evaporated metal on the oil-wetted areas will be avoided.

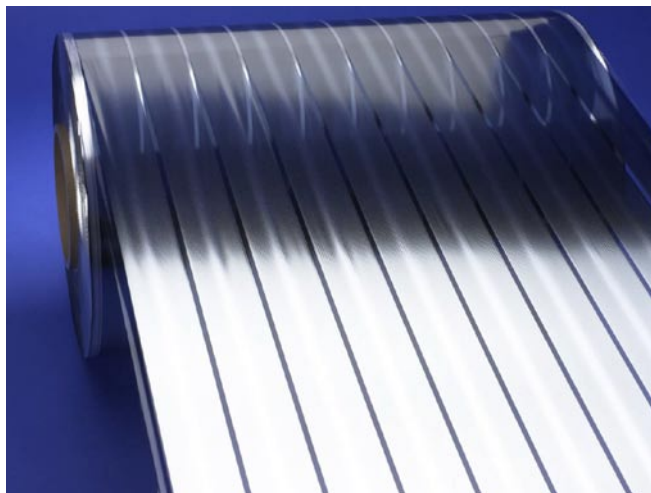


Fig 1: Capacitor film with Al / Zn layer and free margins





TECHNOLOGY

Detailed Information

General principle of the new free margin oil evaporator, based on flash evaporation

The new evaporator consists of a heated metal body with a heated surface (flash evaporator) in the centre. The temperatures of the body and the flash evaporator are kept constant. The body is heated to avoid any condensation inside. Exchangeable nozzles with snap closings allow a product change within a few seconds. The flash evaporator is fed with oil through a thin oil pipe connected to the oil pump and the oil reservoir. Pump and reservoir are located under atmosphere outside the vacuum chamber. The supplied quantity of oil respectively rate of oil is controlled by the speed of the pump. The speed of the pump depends on the area of free margins, winding speed, layer thickness and is automatically controlled in a closed loop.

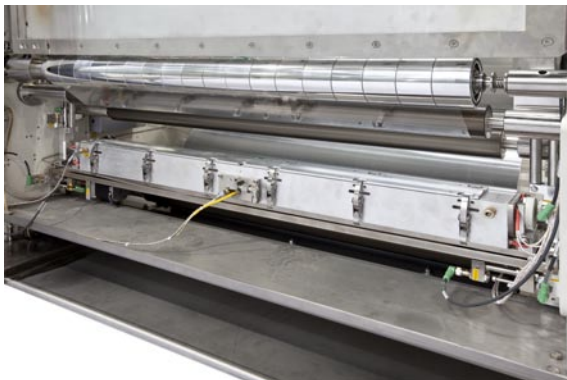


Fig 2: Free margin oil evaporator – service position Fig 3: Free margin oil evaporator – working position





TECHNOLOGY

Detailed Information

Advantages and benefits of the new free margin oil evaporator

- Higher efficiency and productivity.
 - No start-up scrap due to oil splashes.
 - Minimized setup time (approx. 30 seconds) due to exchangeable nozzles with snap closings.
- Cost savings.
 - 100 % oil utilization - oil evaporation only takes place during the process/metalizing.
 - No used oil is generated or needs to be removed.
- Consistent product quality.
 - The process conditions are uniform, stable and reproducible.
 - Optimum thickness of oil for each product, even at varying winding speeds, different layers, margin width and quantity through closed loop regulation.
- Ease of operation.
 - Refilling of the oil reservoir under atmosphere even during the processes.
- Flexibility.
 - Maximum range of applications – even capacitors which typically require the expensive and complex band masking can be processed.¹

¹ Proven under production conditions.

