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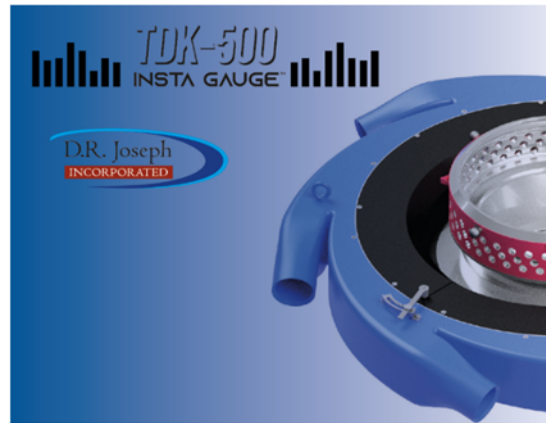


Press Release

D.R. Joseph Reveals Auto-Gauge Air Ring with Innovative Approach on Lower Lip Control and Component Modularity

Arlington, TX, June 27, 2022:

The TDK-500 is a new automatic gauge control air ring introduced by D.R. Joseph Inc, world leaders in Internal Bubble Cooling and air flow control systems. The new air ring will be available to blown film producers in Fall 2022 which is designed to be used with the company's forthcoming InstaGauge™ auto thickness control system which also will be introduced this fall. The unique design equips the TDK-500 with a host of innovative features which boost versatility and provide a faster control response with higher resolution than current offerings



The TDK-500 air ring is a result of five years of development which drew from DR Joseph's 30+ years of internal bubble cooling (IBC) controls design experience, 30+ years of air ring design experience from Techflow Design of Mississauga, Canada, and 30+ years thickness measurement experience from Kündig Control Systems of Ruti, Switzerland. The combined experiences created innovations which focused on making an auto gauge control air ring easier to install, easier to operate efficiently and much easier to modify and maintain. Further, all of these same innovations will be adapted to conventional air rings later next year.

The new dual-lip TDK-500 has four important innovations while retaining the high performance expected from dual lip air rings:

- 1) Instant setting lower lip adjustment technology (patent pending Techflow) which completely eliminates the traditional threaded mechanism. Operators can find and secure the perfect lower lip adjustment in a matter of seconds. The adjustment includes a scaled indicator for SOP purposes. This intuitive design eliminates the intimidation factor of managing bubble stability because operators can quickly "test" the entire

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setting range within 10 seconds. Anyone who has struggled with the endless rotating of the lower lip adjustment can appreciate the instant nature of this setting.

- 2) Affecting change to the film for consistent gauge control is made more difficult when high performance is also a requirement. The TDK-500 isolates the primary lip cooling from the gauge control adjustments made using the secondary lip cooling air streams. This keeps the bubble locked consistently to the forming cone for all conditions. The innovated part of this design is the constrained zone design (patent pending Techflow). The air flow from each control zone is constrained in an independent channel that extends to just before the secondary lip exit. This eliminates zone cross mixing and provides a more direct and effective control response to the film.
- 3) Instant access for cleaning the lower lip exit technology (patent pending DRJ) allows the operator to release the locking feature without tools and safely lift the secondary and cooling collar assembly to a designed cleaning position within the air ring in less than 60 seconds. IBC hardware need not be removed. Optional weight reduction is available for easier lifting is available from a 3D printed polycarbonate cooling collar (patent pending). Additional 3D printed components are still under development.
- 4) Instant lip set swapping technology (patent pending DRJ) allows the primary and secondary lips to be removed and replaced without tools and without lifting the entire air ring off of the die. A time and cost saving measure which expands the versatility of the air ring. For instance, an operator can change the lower lip geometry to provide a custom air flow impingement angle or to handle lower blow-up ratios within 5 minutes (excluding the time required to remove the IBC exhaust stack).

Again, the TDK-500 is a high performance dual-lip design established from years of experience for the widest range of materials including ultra-low melt strength materials.

The TDK-500 air ring and InstaGauge™ control system will be on display at K-Show 2022 in Dusseldorf, Germany, at the D.R. Joseph Stand: Hall 10 stand G43. For additional information, please contact sales@drjosephinc.com, call +1-817-987-2030, or visit www.drjosephinc.com/automatic-air-ring-tdk500/