Dr. Schenk offers a comprehensive and unique testing solution for the new DVDR DL format. The Dual Layer DVD recordable technology implicates several tighter specifications, compared to those for single layer DVDR. Of course, it is preferable to use existing DVDR equipment, however, the dual layer structure and production processes of DVDR DL require the application of testing equipment with a special optical design. The close interaction between Dr. Schenk and major disc manufacturers led to the optimum solution for in-line, as well as off-line, inspection and measurement equipment, thus enabling reliable quality and process control for dual layer disc production.

There are at least two competing production processes for DVDR DL in evaluation today, the Inverse Stack and the Surface Transfer Process (2P). Dr. Schenk is the first to launch a unique testing solution that serves both of the entirely different process technologies. A two-step inspection strategy, consisting of the unique dye scanner ISM.dl combined with the final scanner ISM.dvd, provides the necessary inspection tools to produce discs within the new, tighter specifications.

**Dye Scanner ISM.dl with Unique Optical Design**

The clever optical design of the dye scanner ISM.dl allows consistent detection of local defects like dye voids, dye comets, or dye splashes, on both half discs L0 and L1. This is despite their different structures in an Inverse Stack Process. Furthermore, the same innovative design enables the evaluation of the entire optical density on both half discs with no measurement distortion by the sputtered layer. This very same feature gains particular importance for the Surface Transfer Process with its multi-layer structure. If conventional dye scanning technology is used instead, the inspection results of the dye layer L1 would include the conditions of the dye layer L0, as well as the semi transparent sputtering layer. The ISM.dl virtually eliminates these undesirable influences, displaying only the true results of the dye layer L1.

In addition to these benefits, this dual layer dye scanner provides the measurement of the buffer layer (Inverse Stack Process), as well as the measurement of the semi-reflective layer. Measurement of the substrate thickness L0 is available as an option.
Final Scanner ISM.dvd with ETI Unit

To ensure an overall good disc quality, the final scanner ISM.dvd detects local defects on the bonded disc. It also monitors the critical parameters of each finished DVDR DL. Only Dr. Schenk offers both separate and composite substrate and space layer thickness measurements, as they are mandated by the specification. All measurements are accomplished during one scanning revolution and are therefore without any impact on cycle time. The high resolution deviation unit, included in the ISM.dvd, accomplishes the control of the tighter specification, particularly for variation over one revolution. In addition, a series of valuable options are offered by Dr. Schenk, which the industry highly values in the ISM in-line scanners.

The quality assurance of DVDs is only complete when both physical properties and electrical signals are tested. Particularly the reflectivity of layer 0 and layer 1, as well as the groove geometry, are the most critical process parameters for the dual layer disc replication. Dr. Schenk delivers a unique solution for this inspection requirement. The ETI is a pick-up head sensor that tests electrical signals in-line. It monitors the reflectivity of the unrecorded grooves of L0 and L1 on every single disc. As well as this, the Radial Push Pull (RPP) is monitored for the control of the groove geometry. ETI provides rapid process control feedback, indicating problems in real-time, as the discs are replicated. Moreover, as ETI is integrated in the ISM.dvd in-line scanner, it requires neither additional space nor has any influence on the cycle time.

PROmeteus MT-200 Measurement System

The PROmeteus MT-200 represents the industry reference tool for the calibration of new production lines and, of course, for the continuous process control during optical disc replication. Equipped with a range of valuable features, the stand-alone MT-200 measures all physical properties of a DVDR DL at any production step. Again, like the in-line dye scanner, a smart optical design enables the MT-200 to accomplish explicit measurements of the optical density for both layers L0 and L1. The design of this dual layer option is equivalent to that of the dye scanner, therefore leading to identical measurement results. With its complete feature set and high accuracy and repeatability, the PROmeteus MT-200 is an indispensable analytical tool for process stabilization and root-cause analysis.

The innovative inspection and measurement solution for DVDR DL from Dr. Schenk is already widely proven in multiple prototype lines worldwide. This has manifested Dr. Schenk's commitment to keeping ahead of new inspection technology for upcoming disc formats. As replicators implement and expand their DVDR DL production, they continue to rely on the outstanding performance, reliability and quality of Dr. Schenk system solutions.

For more information or further questions please contact your Dr. Schenk sales representative or email us at info@drschenk.com.