

Getting Closer to Blu - ray Cover Layer

MEDIA TECH, Long Beach, Oct. 10th , 2006

Dr. Volker Wüstenhagen



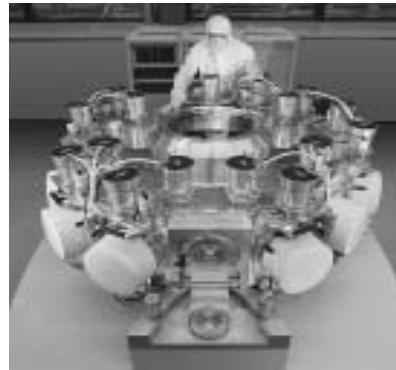
Our products



Swivel



Cube Star



Sprinter

Sputtering systems



Matrix/Fusion/Paragon

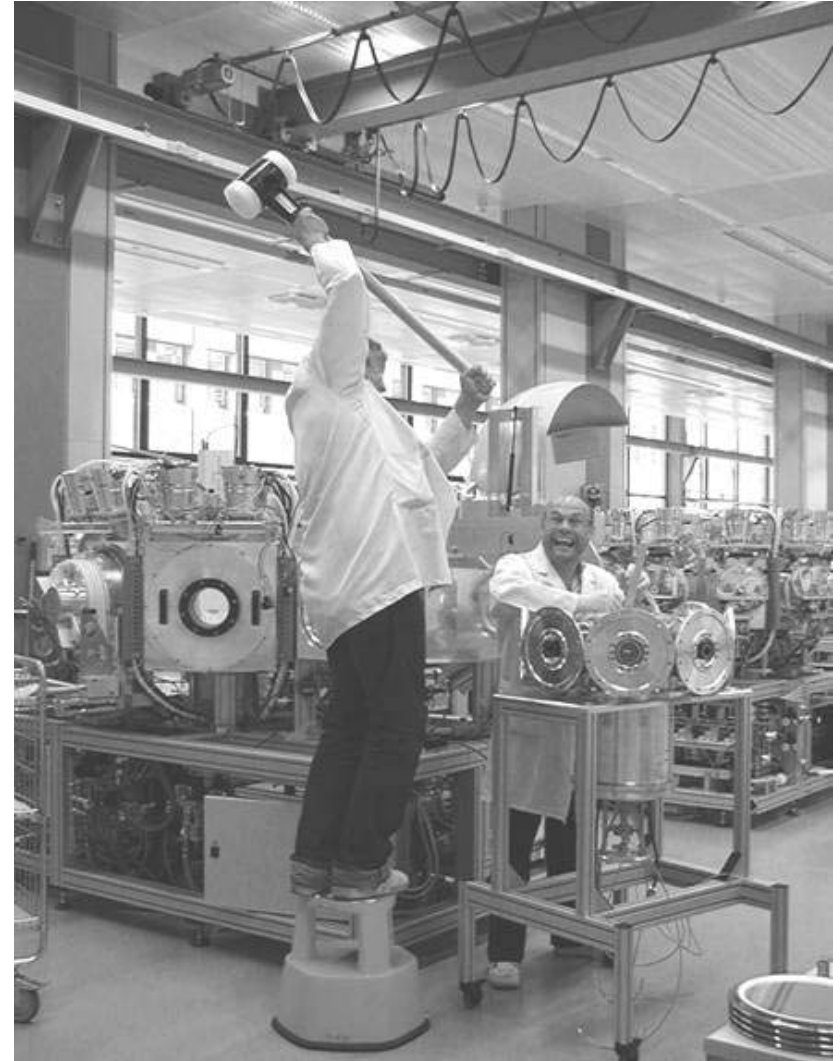


Replication lines

We worked hard to provide you the

Indigo

simple, easy and robust
solution
to make BD as easy as CD



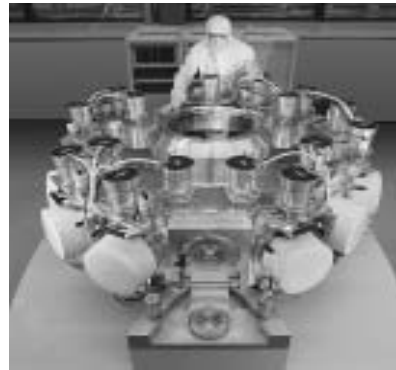
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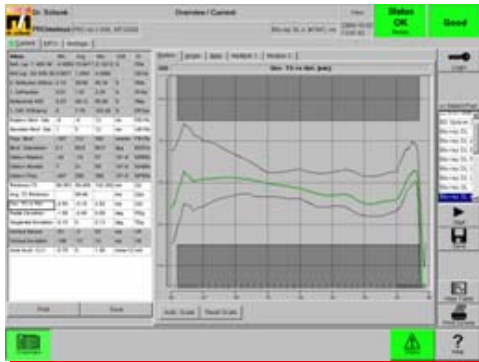
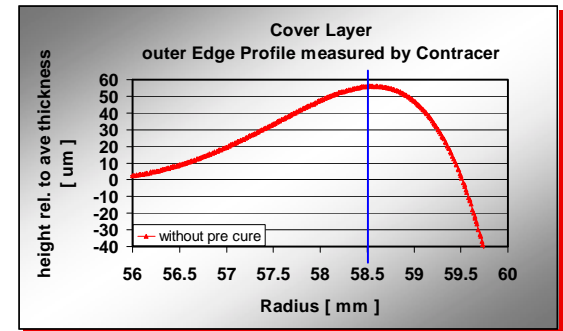
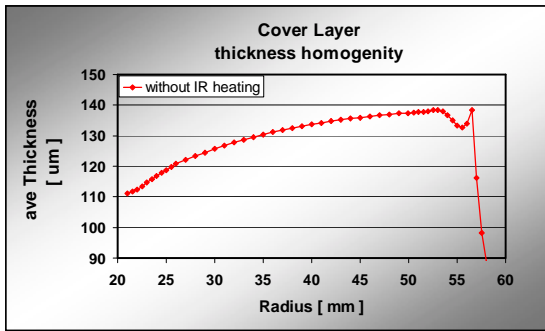
Replication lines

Agenda

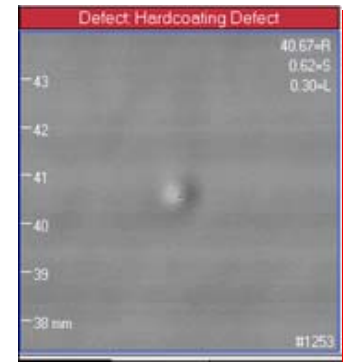
Getting Closer to Blu - ray Cover Layer

- Spin Process / Cover Layer Solution
- Solution for BD Manufacturing
- Results
- Dual Layer Outlook

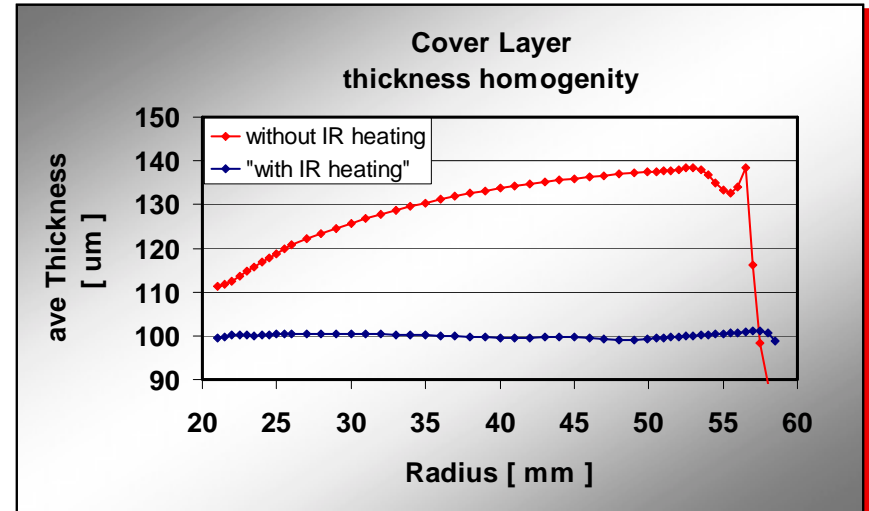
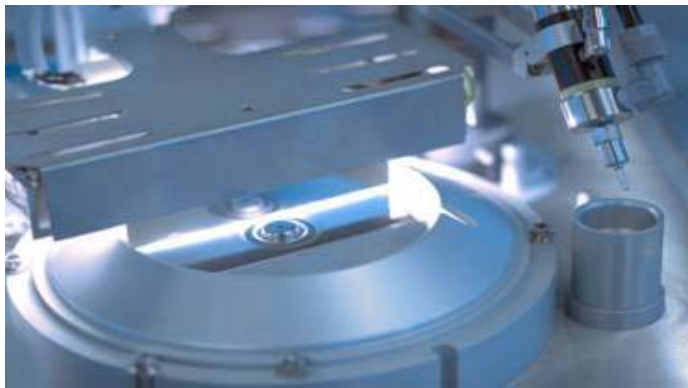
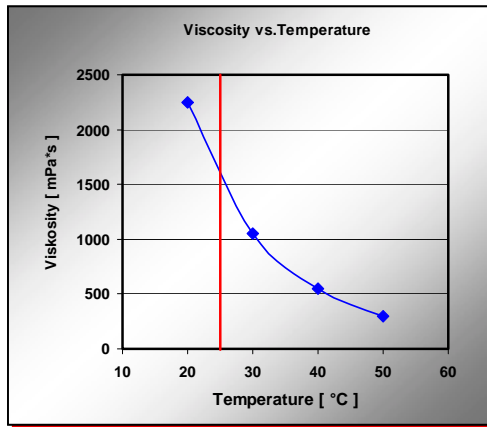
Spin Process ⇒ Four Challenges to be solved



- Layer uniformity vs. radius
- Outer edge bump
- Uniformity at inner diameter
- Defects

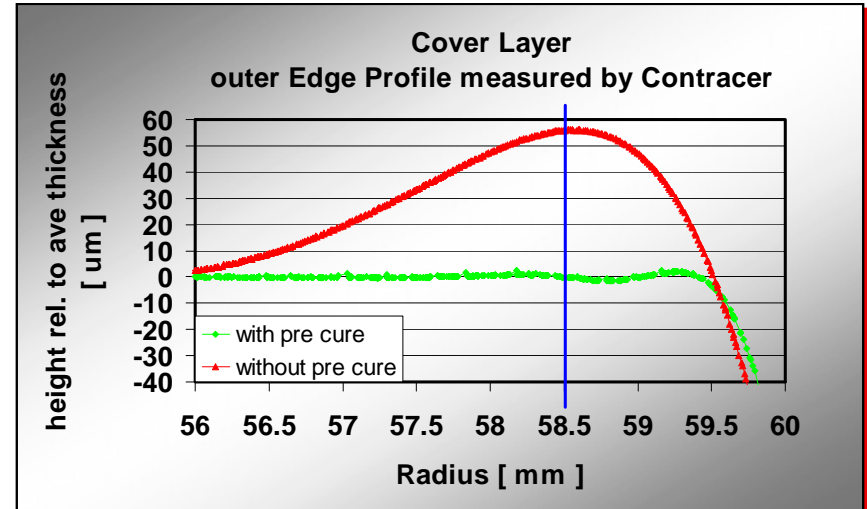


Challenge 1 ⇒ Layer Uniformity

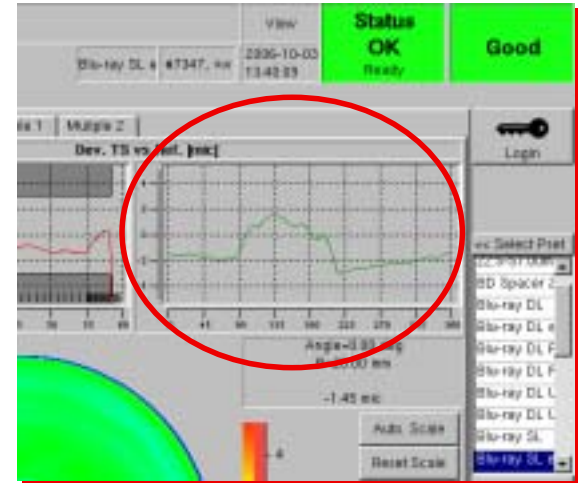
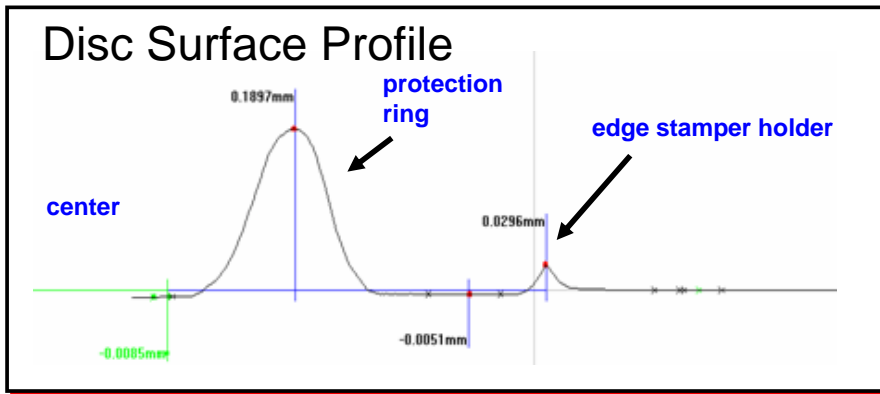


Challenge 2 ⇒ Outer Edge Bump

UV Radiation

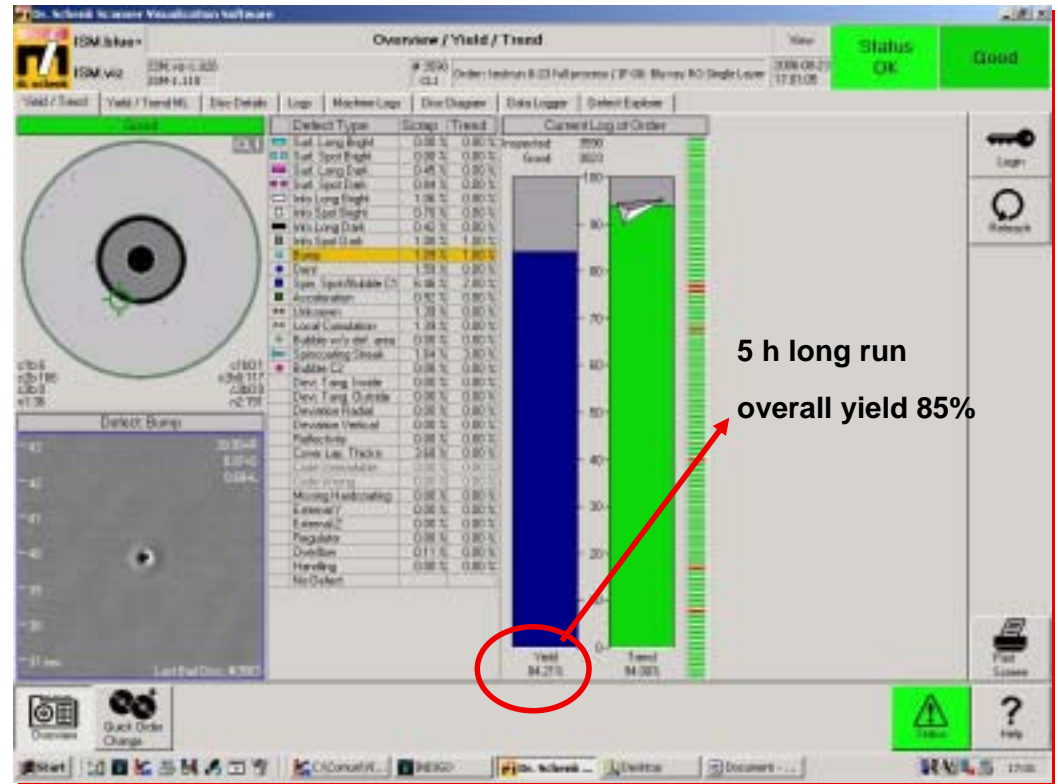


Challenge 3 ⇒ Inner Edge



Challenge 4 ⇒ Defects

- Investigation of disc playability contra defect size
- Definition of scanner parameter

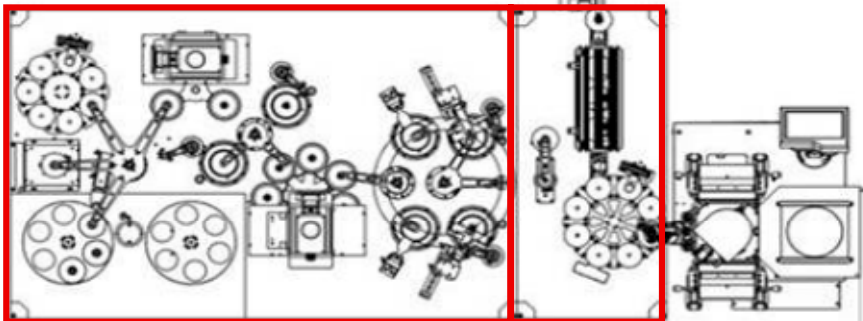
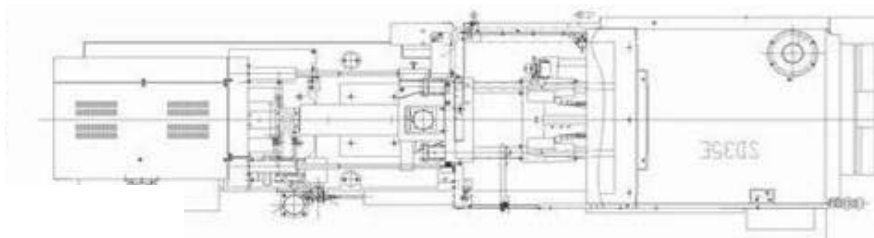


Agenda

Getting Closer to Blu - ray Cover Layer

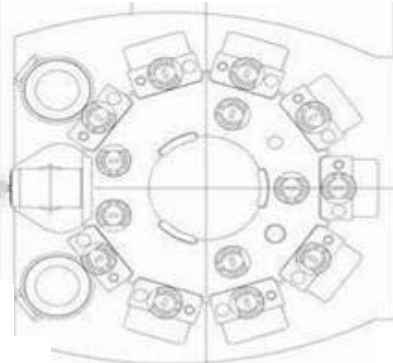
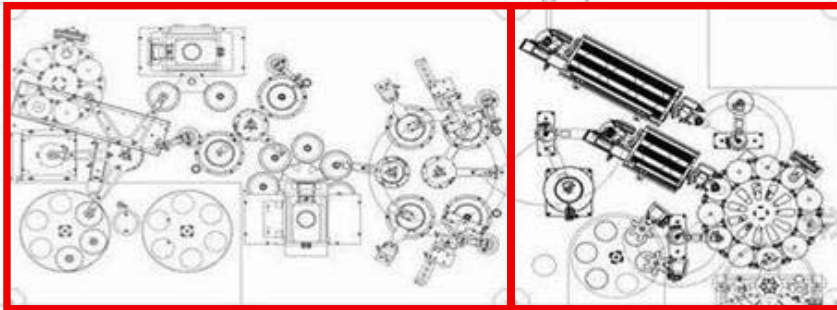
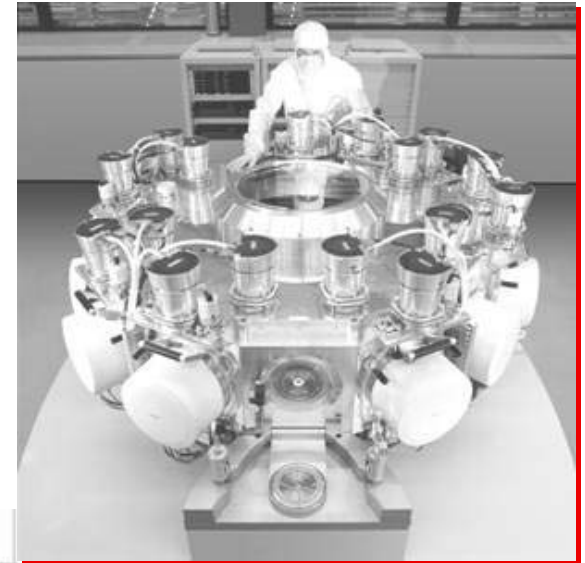
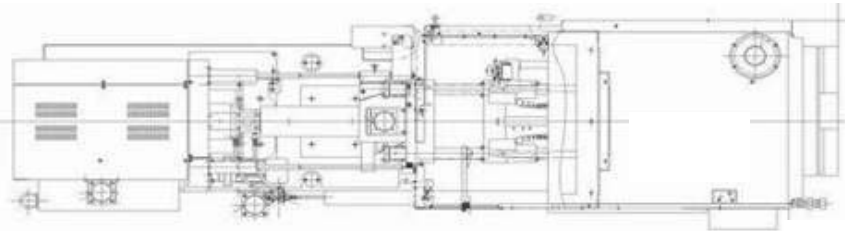
- Solution for BD Manufacturing

INDIGO ⇒ BD-ROM SL Solution



Total footprint: approx. 3.9 m x 3.3 m x 2.0 m

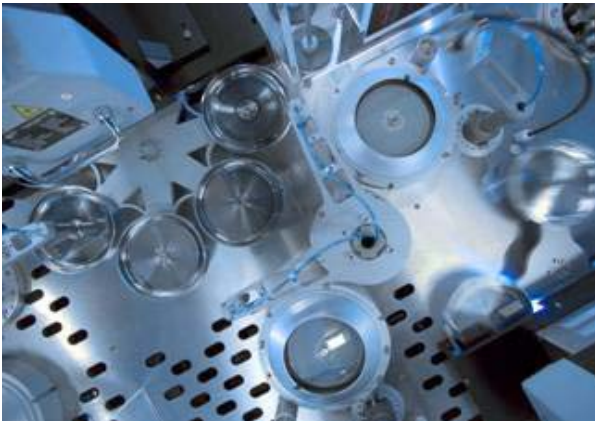
INDIGO R/RE ⇒ BD-R/RE SL Solution



Total footprint: approx. 5.6 m x 3.8 m x 2.0 m



Impressions



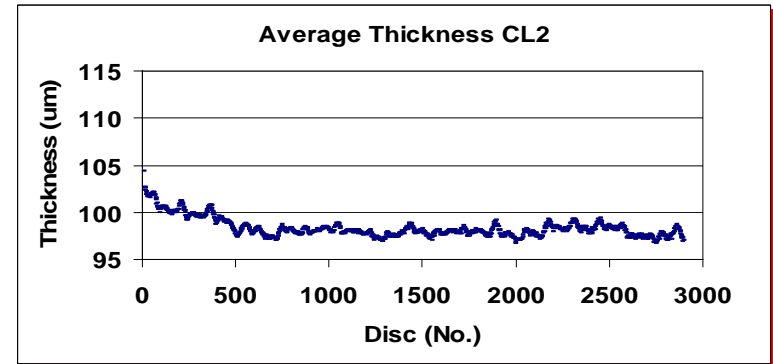
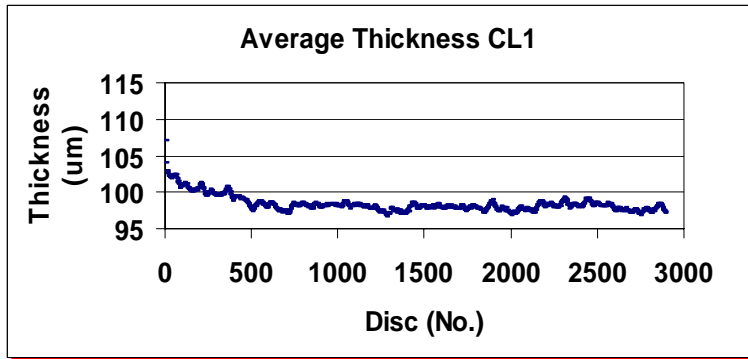
CUBE STAR FLEX for BD-ROM

Agenda

Getting Closer to Blu - ray Cover Layer

■ Results

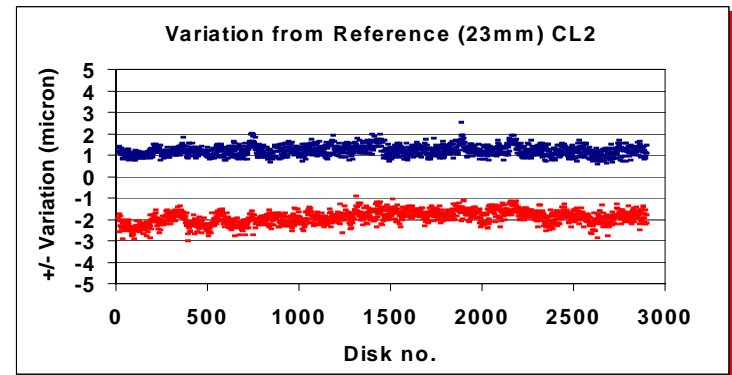
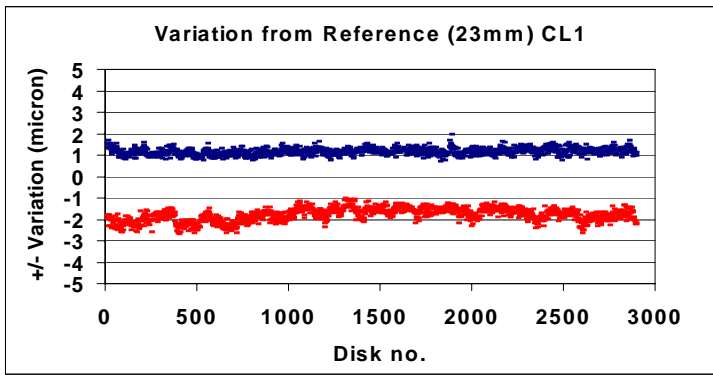
Results from Inline ⇒ Cover Layer Stability



- Stable cover layer production, showing controllable start up effect
- Customer estimated Cpk 24h run

	CL 1	CL 2
R 21	1.69	1.9
R22.5	1.92	1.59
R 58.3	1.46	1.34
R 58.5	1.38	1.22

Results from Inline ⇒ Cover Layer Stability



- Variation of cover layer stable within BD ROM spec ($\pm 3 \mu\text{m}$)
- Customer estimated Cpk 24h run

	CL 1	CL 2
R 21	3.65	2.17
R22.5	2.48	1.7
R 58.3	1.09	1.08
R 58.5	1.05	1.03

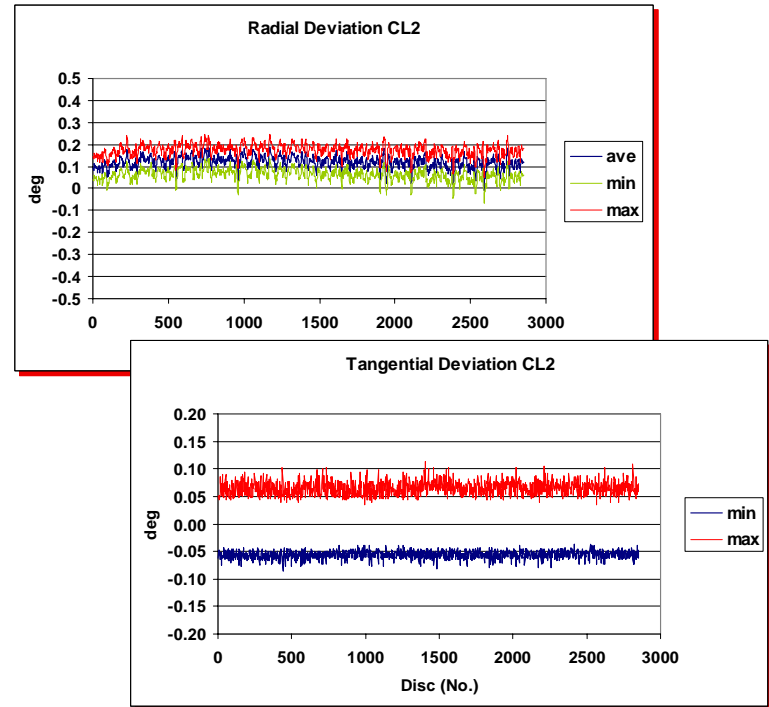
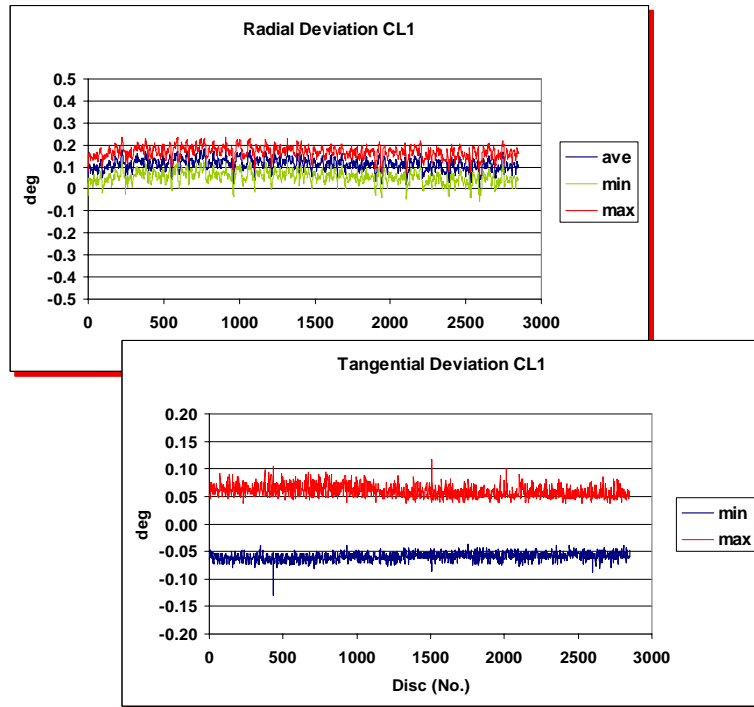
Results from Inline ⇒ Cover Layer Uniformity



- Cover Layer uniformity tuneable into BD R/RE spec ($\pm 2 \mu\text{m}$)

Results from Inline ⇒ Disc Deviation

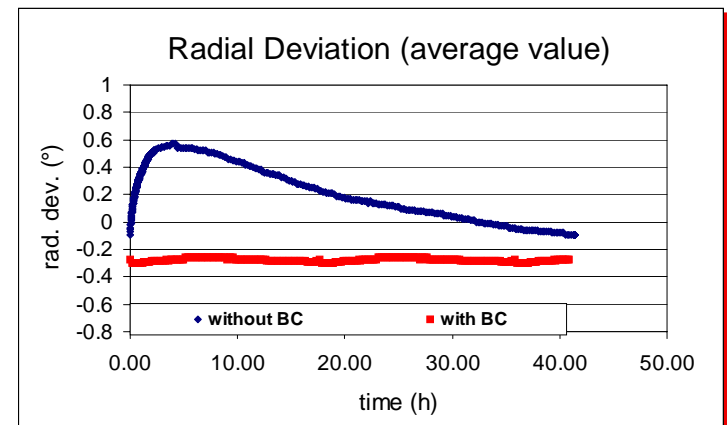
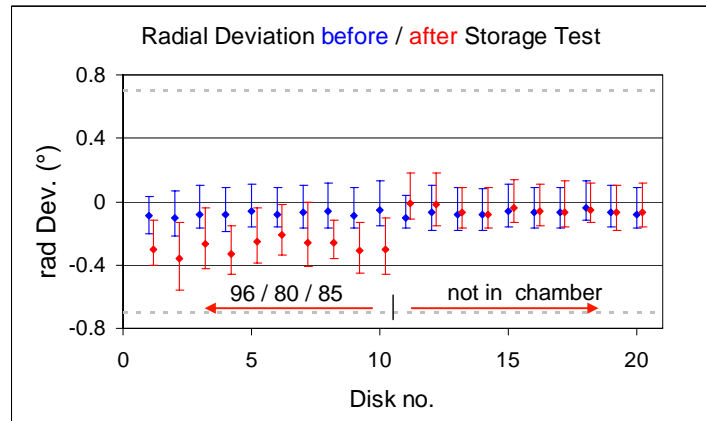
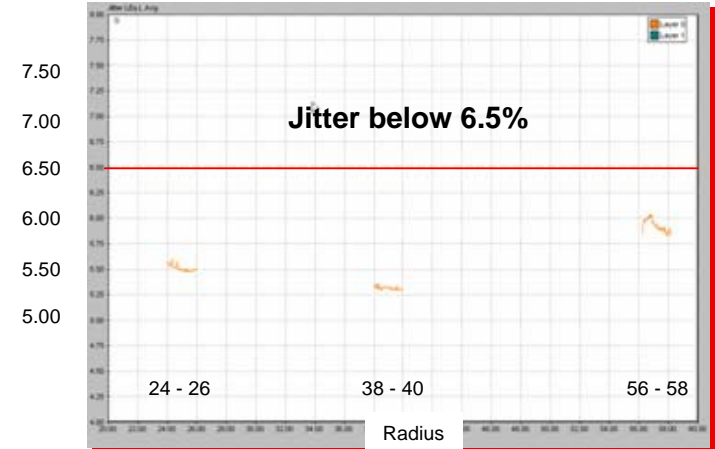
Radial and Tangential Deviation



■ Mechanical deviation of final discs including hard coat

Results from Inline \Rightarrow Quality Tests

- Signal quality
- Material combinations
- Climate test
- Sudden humidity change

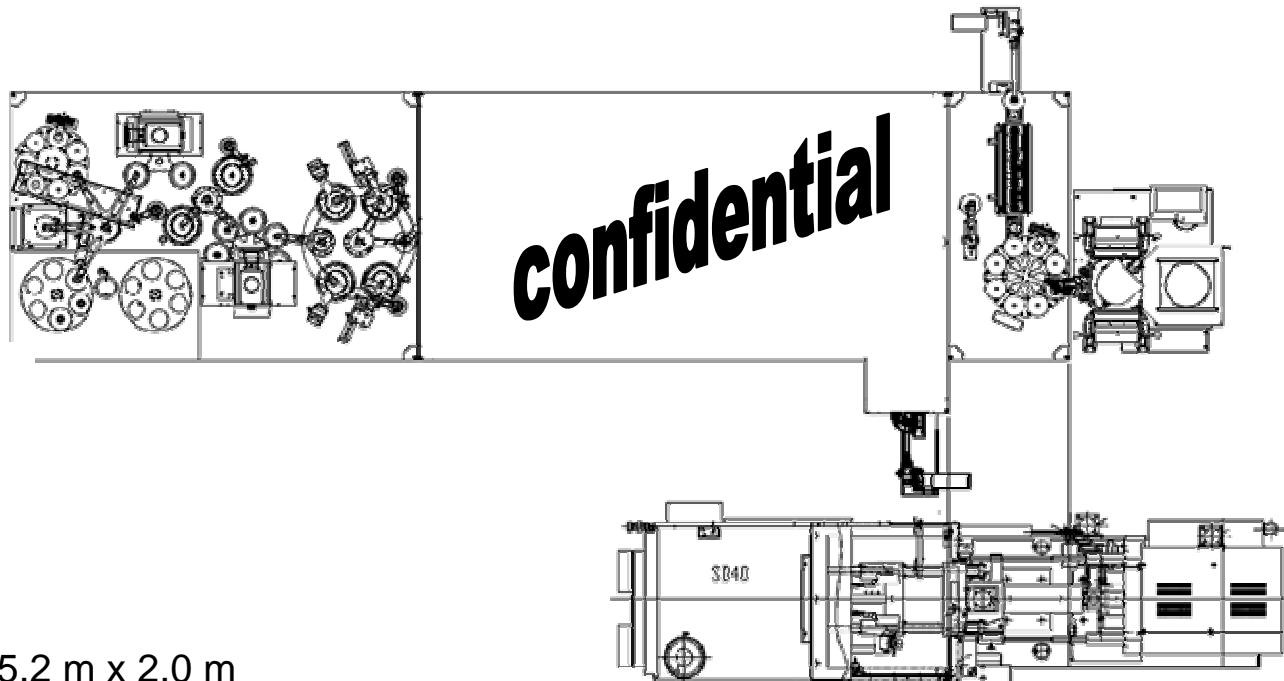
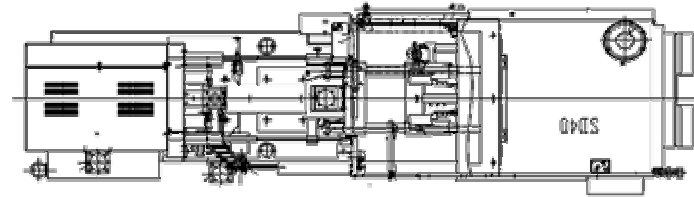


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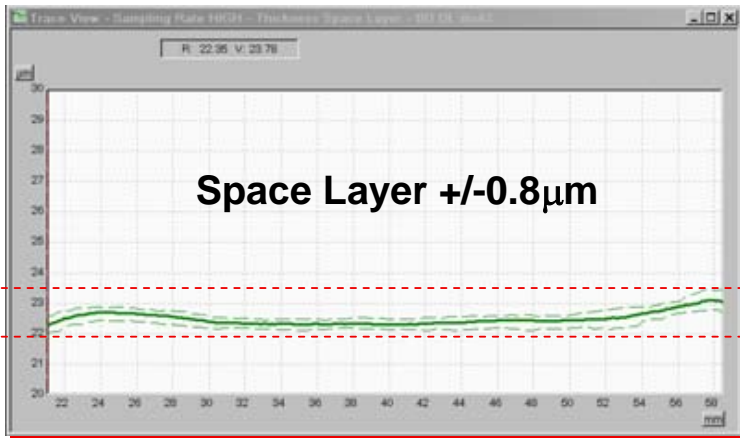
- Dual Layer Outlook

INDIGO ⇒ BD-ROM DL Solution



Total footprint:
approx. 7.5 m x 5.2 m x 2.0 m

BD DL Results \Rightarrow Variation Cover Layer + Space Layer



- Over all thickness uniformity better $\pm 2\mu\text{m}$

INDIGO

the tough, new, compact & flexible Blue-ray line from Oerlikon



FAST

Cycle Time below 5 seconds



COMPACT

Only 4m x 3m in total for ROM



FLEXIBLE

Same platform for ROM, R, RE
Upgradeable for DL



TOUGH

Robust low cost spin coating process



Thank You!

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Systems / Data Storage

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