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Universal Adjustable Docking for Automated Test Equipment Systems

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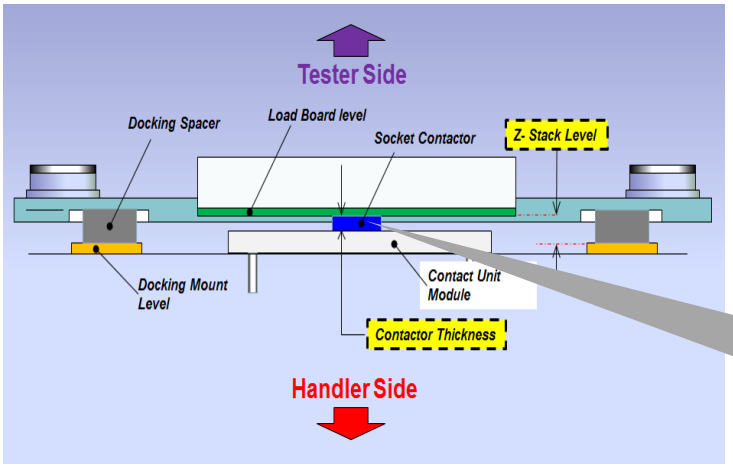
Docking System is a very critical hardware component used to interface on automated test equipment(ATE) and automated placement tool(Handler) that help improve the repeatability of test setup and flexibility to adapt from a full range of ATE to Handler Tandem available in the market.

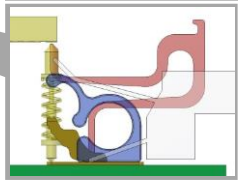
This topic explains the new techniques in designing/modifying a new and old Docking System that is cost effective but yet mechanically robust and flexible.

Motivation

Due to increase of number of hardware interfacing set ups required for newly developed devices requiring new contacting technology solution that affects the Z-stack docking level which makes the docking system nowadays to become more complex and costly as well.



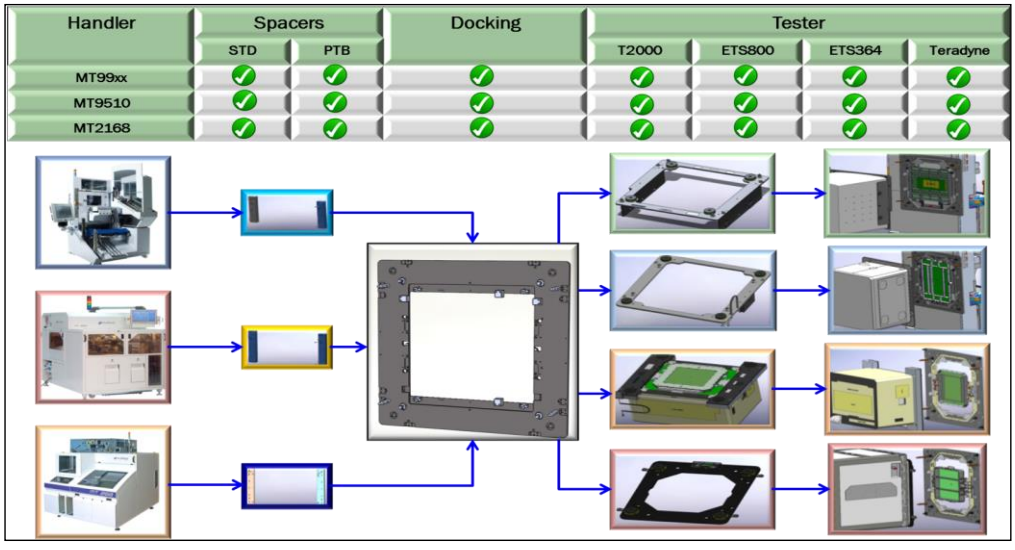
Z-Stack level is directly affected by the ***variation*** in **contactor thickness** due to emerging new socket pin technology which require varying socket base thickness develop by several manufacturers.



A universal adjustable docking system is required to cater several hardware changeovers that has varying or multiple Z-stack level.

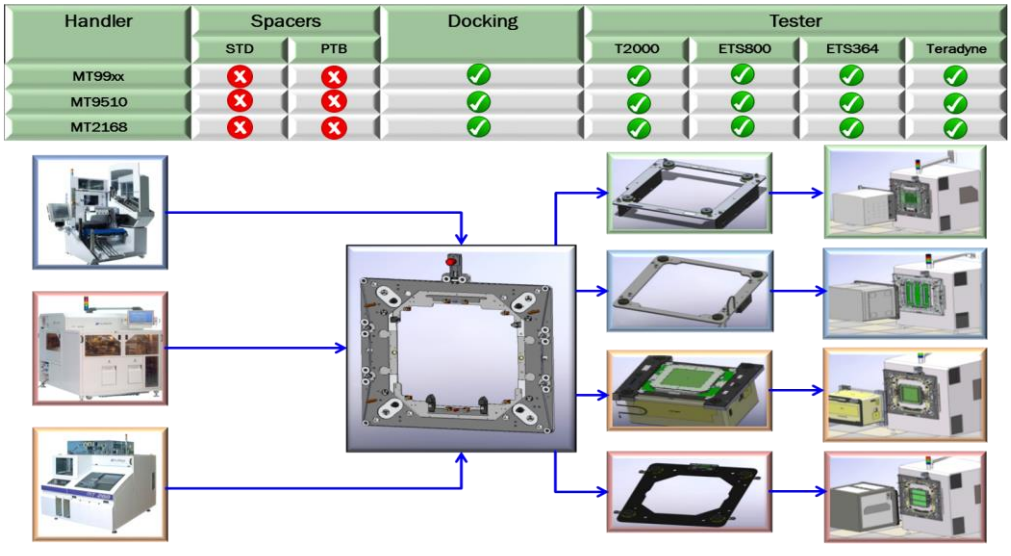
Basic Design Practices

Current approach in developing new docking system are mostly dedicated to handler which requires ***specific docking spacers or indexer plates*** to comply on varying Z-stack level requirements.



New Design Techniques

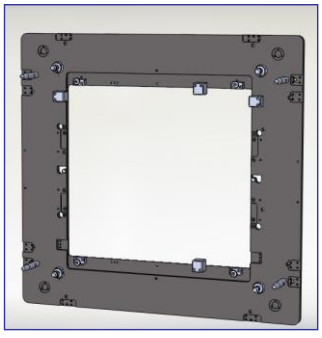
The solution is to eliminate the use of dedicated spacers by integrating a ***power screw mechanism*** which can be adjusted and will drive back & forth the custom handler mount plate to comply on the varying Z-stack level requirements. In reference to US Patent# : 9519023

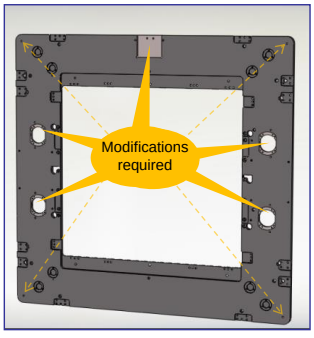


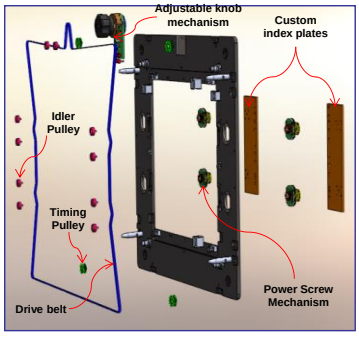
Adapting Design Concepts

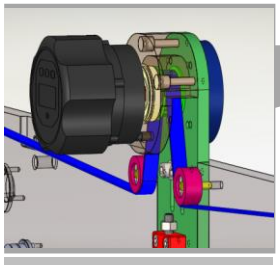
Fabricating the whole docking system to comply on a new ATE and handler interface which require new Z-stack level is very costly. Other approach is to integrate this new design concept on your existing docking hardware to save cost.

Old base plate → **Modified Design** → **Parts Assembly**

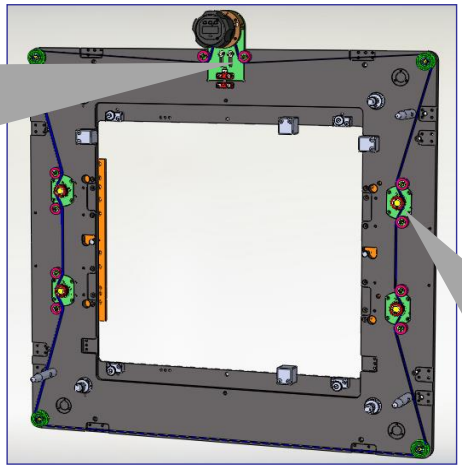




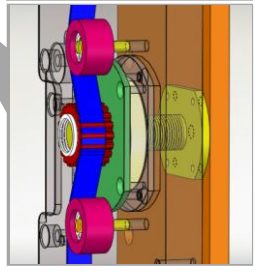




Adjustable knob Mechanism serves as the Z-stack level controller. It operates by turning the knob clockwise/counter-clockwise to move the whole drive chain module



Power Screw mechanism converts the rotational movement of the whole drive chain into *synchronized linear movement* thus driving back & forth the custom indexer plates



Conclusion

This technique is an effective way of solving varying Z-stack level requirements & interchanging setups caused by emerging contacting technology and various range of ATE systems/handlers tandem available in the market.