



Key Benefits of Devices based on Inometrix Virtual Reference™ Interferometer Technology

In a **traditional interferometer** light is split into two separate paths: the test path with unknown characteristics and the reference path with well known characteristics (physical reference path). The light beams are then brought back together to provide information about the characteristics that differentiate the two paths. The main problem with this old paradigm is that building a good reference is both difficult and expensive.

At Inometrix our products are based on **Virtual Reference™ Interferometer** technology. This technology represents a paradigm shift in the way we think about the interferometer and allows us to replace the function of the physical reference path with software. This enables higher performance while lowering end user costs. The charts below describe the benefits of this new technology.

	Physical Reference Interferometer ¹ based Devices	Virtual Reference™ Interferometer based Devices	Benefit to Customer
Accuracy	Calibration error present	Calibration free – no unknown error introduced	Tighter performance specifications mean higher quality devices.
Stability	Thermal/vibrational instability due to physical reference path	Thermal/vibrational stability	Infrastructure (optical tables and dedicated lab space) not required
Portability	Not portable	Portable	Allows for inline / on site testing
Speed	Multiple scans required	Single scan completes the experiment	Fast real time testing, lower costs
Fully Automated	Sometimes	Always	Low operating costs, training and technical knowledge not required
Software Based	No	Yes	Environmental/geographical conditions do not affect experimental results

¹i.e. Michelson or Mach Zehnder Interferometer based devices

Areas of cost savings from using Virtual Reference™ Interferometer based Devices	Estimated Savings for Customer ²
Time saved per test (50 seconds vs. approx. 1 hour)	Savings of \$180,000 / year
Elimination of need for optical table / lab space and labour to set up a Michelson/ Mach Zehnder interferometer. Including <ul style="list-style-type: none"> • Optical delay line with high precision alignment • Calibration • calibration monitoring equipment • Temperature/stability control equipment 	Savings of \$100,000
Elimination of the need to maintain a Michelson/ Mach Zehnder interferometer.	Savings of \$70,000 / year
Ease of testing with the unit – do not need highly qualified personnel for testing as it is fully automated.	Approx \$40,000 / test station
Accuracy of the experiment leads to tighter specs – higher quality (cost) products can be sold.	Product price can be increased by at least 25%

²Based on average industry testing and is to be used as a guide only