



Waveform Success Story

Number 001

Test: Simulate the Output of a 3-phase Current Transducer
Industry: Motors, Drives and Controls
Unique Requirements: Variable Frequency without Phase Calibration

After three weeks of testing an Agilent Model 33120, a test engineer determined the Agilent units could not perform the test. The engineer, who was now behind schedule, contacted TEGAM and we were able to solve his problem and get him back on schedule.

In this automated test project, three arbs had to be synchronized in order to simulate a multiple-phase supply. The engineer initially evaluated Agilent's Model 33120, a Direct Digital Synthesis (DDS) arb, for this project because it advertised a phase-lock option. Assuming phase-lock is the same for all generators, the engineer made his final decision based on sampling frequency, believing that a higher sampling frequency would yield a lower distortion level. These were both wrong assumptions.

DDS generators can share a common reference clock; but when synchronizing multiple units, the phase offsets must be re-zeroed every time the output frequency is changed. In addition, waveform data could be skipped or repeated depending on how precisely the output frequency divides into the sample clock. The customer learned, during their initial testing, that the resulting waveforms were not truly phase-locked and would not adequately reproduce the intended signal at certain frequencies.

TEGAM was able to save the day because our design has the ability to produce a true phase-locked system, allowing variation of any parameters without need for repeated calibrations. It also turned out that, contrary to the engineer's initial beliefs, the TEGAM Model 2411B had a much lower harmonic distortion level than Agilent's because it has 16-bit vertical resolution and does not skip or repeat waveform data points as with DDS. The 2411B was able to properly synchronize with other instruments in the test system without compromising signal integrity. Multiple units were sold with prospects for additional test stands in the future as this customer rolls out copies of the prototype into production facilities!

The vast amount of information in the waveform market has created a common confusion due to the misuse of the terms DDS (Direct Digital Synthesis) and AWG (Arbitrary Waveform Generator). Much of the technical world assumes that one design is the same as the other and that the end result is pretty much the same. This assumption is dangerously incorrect. In fact, there are significant differences between the two designs and an application may be compromised by not knowing the difference!

Helping customers understand which design is best for their application is what TEGAM is all about. Contact a TEGAM applications engineer to find out what instrument best fits your application and avoid wasting weeks of your valuable time.

Focus on the Waveform, not the Box