TFM Software

- Total Focusing Method

Several Implementations
- Standard TFM
- Migration TFM
- Advanced TFM
What is FMC?

**FMC (Full Matrix Capture)** is a unique data acquisition sequence implemented by high performance advanced ultrasound instrument which captures raw RF wave forms as shown in the diagrams below.

![FMC Diagram]

What is TFM?

**TFM (Total Focusing Method)** is a signal processing algorithm applied on the raw RF waveform data from performing FMC. Now with the speed of modern computing we can use TFM for real-time imaging. The equation and diagram below represents the standard TFM implementation. The image below shows a comparison between TFM and conventional Phased Array UT.

![TFM Equation]

Benefits

- Beautiful Image! Easier to understand what you’re looking at
- High Resolution Imaging (Both Lateral and Vertical Axes)
- Completely focused in entire volume
- Improved Signal to Noise Ratio (SNR)
- Easier to define setups compared to conventional PA
- Less risk of making setup mistakes
- FMC data can be reprocessed without going back to the field.
- See image from different wave modes with one setup
- Oriented defects (e.g. cracks) are imaged better
- Much easier to size flaws!!

![Conventional PA vs TFM]
TFM Acquisition

Choose different wavemodes

Choose TFM Mode

Flexible Reconstruction Grid

Check box to view raw data

Probe with wedge and 85mm thick aluminum 1 mm SDH test piece
TFM Setup Wizard
- Supports Linear, Pitch/Catch Probes
- Compatible with wedges
- Can be used with immersion UT system

Choose TFM Mode
Select Probe Type

TFM Viewer
- Loads encoded raw FMC data
- Zone in on specific areas of scan with cursors
- Analysis tools available to provide the results you need

Shown in image:
- Lack of fusion flaw in a girth weld
Different Modes:

Longitudinal or shear waves, half leg or one leg, from the same FMC data acquisition

Better ability to characterize, size and locate defects.
TFM Software Services

What can TPAC do for you?

- Customize TFM software to fit your application
- Analyze FMC data
- Help you design the best PA probe for TFM
- Feasibility Study: Scan your parts so you can see the benefit of TFM
About TPAC

Custom Software
- Developing the exact application you want
- Phased Array and Conventional UT
- Solutions ranging from simple to complex

Custom Probe Design
- Phased Array (Linear, Matrix, Annular, Pitch/Catch)
- Simulation, Manufacturing, Characterization
- Selecting the right probe for your application

Training and Support
- Teaching inspection techniques to technicians
- Supporting all needs even if that means going out into the field
- Direct line to over 25 years of experience in providing NDT services

Consulting
- Deciding between phased array or conventional ultrasonics
- Determining the best equipment for the job
- Utilizing our network of UT equipment suppliers to get the best value

Equipment Customization
- Integrating UT technology into a pre-existing system
- Building custom enclosures for any environment