Ultrasound Technology
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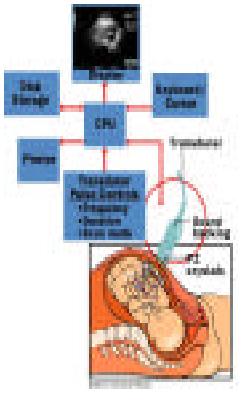
Ultrasound, also known as ultrasonography, uses high frequency sound waves to produce an image. It is widely known for its purpose in obstetrics but can also be useful in cardiology and urology. The components of an ultrasound machine are:

- **transducer probe** - probe that sends and receives the sound waves
- **central processing unit (CPU)** - computer that does all of the calculations and contains the electrical power supplies for itself and the transducer probe
- **transducer pulse controls** - changes the amplitude, frequency and duration of the pulses emitted from the transducer probe
- **display** - displays the image from the ultrasound data processed by the CPU

The steps that the machine goes through to create an image are:

1.The ultrasound machine transmits high-frequency (1 to 5 megahertz) sound pulses into your body.
2.The sound waves travel into your body and hit a boundary between tissues (e.g. between fluid and soft tissue, soft tissue and bone).
3.The reflected waves are picked up by the probe and relayed to the machine.
4.The machine displays the distances and intensities of the echoes on the screen, forming a 2D image. The two-dimensional scans are then combined by specialized computer software to form 3D images.



There are no proven medical dangers to ultrasound, though there has been a report of low birth weights to mothers who underwent regular sonograms. This is thought to be attributed to the heat generated by the transducer in the womb.

We are all familiar with the common ultrasound machine that produces 2-dimensional images on a small window. However, recent technological developments, including increasing microprocessor speed and affordable computers, have facilitated the advancements in this field of medical imaging. In addition to real-time 2D ultrasound, there is the more recent 3D ultrasound. This is much better than its 2D counterpart in the way that it allows for more accurate volume and length measurement and better diagnosis of possible health problems. The most recent advancement, however, is the real-time 3D ultrasound (a.k.a 4D ultrasound). It displays 3D images that move in real time, allowing doctors and sonographers to analyze fetal motion and visualize internal anatomy moving in real-time.

4D ultrasound is so new to the market that only General Electric has a machine with such capabilities. Through a partnership with Kretztechnik (a world-leader in transducer development), GE has built the Voluson 730. Unfortunately, it is only available at 300 sites nationwide and is not covered by insurance. Also, for those soon-to-be mothers yearning to see their baby's face, it is only currently used in high-risk pregnancies.

GE Voluson 730 4D Ultrasound designed by Porsche Design