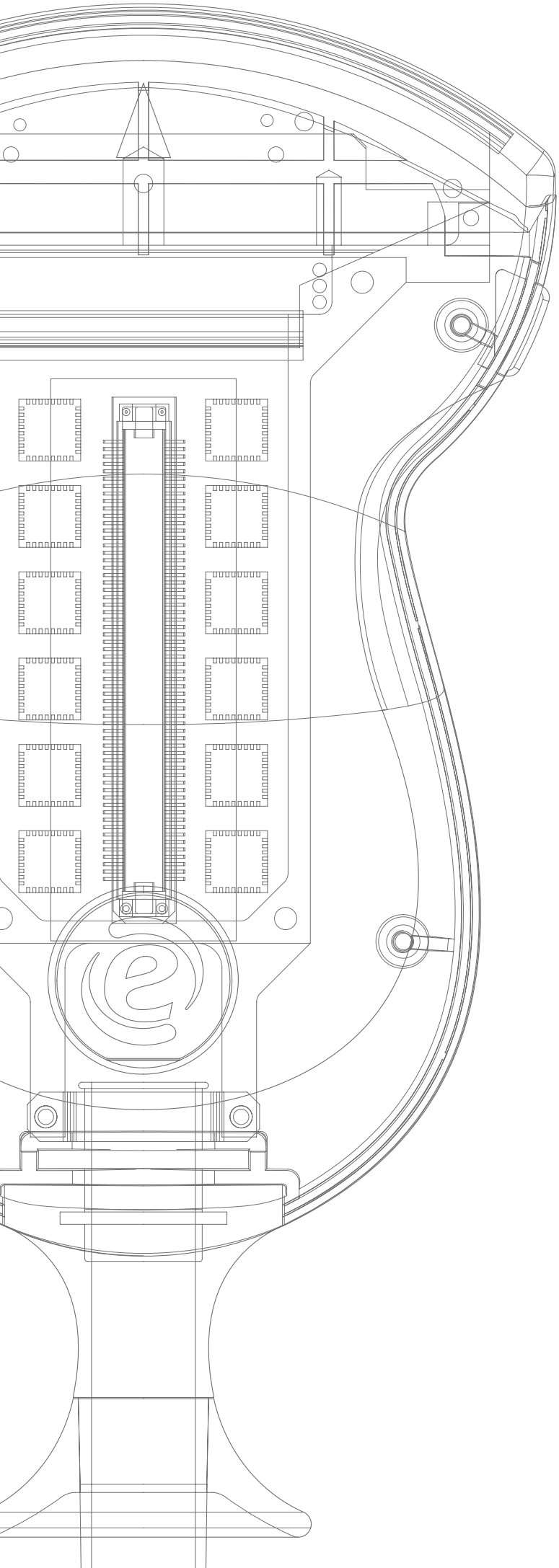
White Paper

iQProbes

Women's Health Ultrasound: Advanced solutions in probe technology



esaote
Creativity in Healthcare

New iQProbe technology for high-quality imaging in Women's Health

Ramona De Luca, PhD, Esaote Ultrasound Probes R&D (Florence, Italy)
Martina Cereseto, Esaote Global Marketing (Genoa, Italy)

The C 2-9 is a high frequency convex array with a specific configuration responsible for perfect characterization of foetus tiny details in the first trimester ultrasound scan. It also provides anatomical scan in the second trimester with great clarity though the whole image field of view.

The E 3-12 is an endovaginal endfire transducer with enhanced sensitivity and high resolution. It offers high clinical confidence in assessing anomalies and pathologies of the uterus and the ovaries and aids the early pregnancy imaging.

Esaote offers a versatile portfolio of probes for high-quality imaging of Women's Healthcare

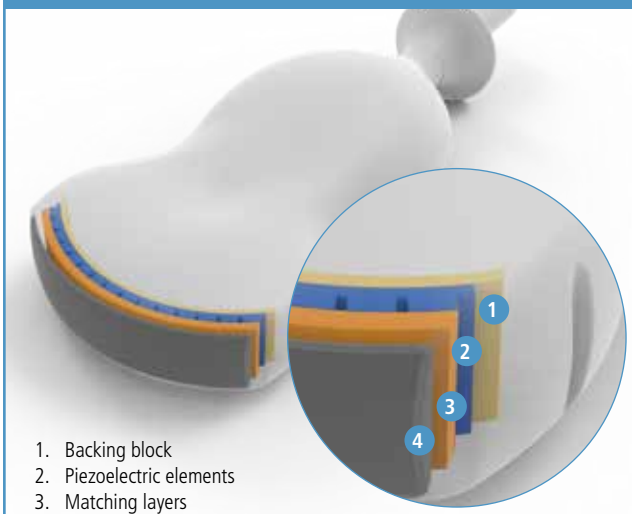
Introduction

As a leader in design and manufacturing of ultrasound probes, Esaote is committed to R&D investment and innovations, and gathers feedback from users to continually improve ergonomics, reliability, and image quality. Esaote's ultrasound systems and probes are designed to make easy and confident diagnoses across a variety of clinical applications, without compromising the comfort of clinician or patient. Recent introduction of new ultrasound transducer architectures with advanced materials and innovative designs is providing high-quality imaging for Women's Healthcare. The new C 2-9 and E 3-12 probes incorporate several innovative technologies that translate into exceptional resolution, penetration, and overall uniformity in all imaging modes.

Probe description

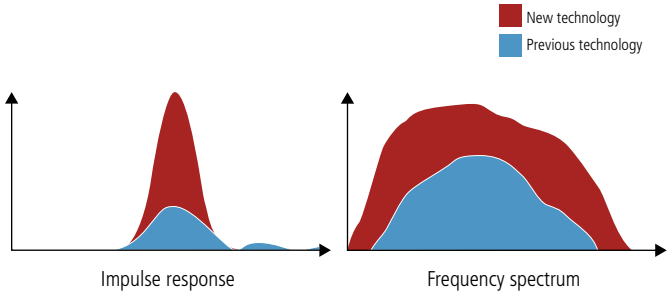
Ultrasound probes (Figure 1) are critical to achieve exceptional imaging performance and repeatability. Their design requires development of advanced materials in order to improve transducer operation efficiency and deliver remarkable image quality (IQ) performances. Recent technology embedded in the C 2-9 and E 3-12 applies a combination of advanced materials together with specifically designed transducer geometry. An acoustic lens material is used that minimizes reverberations and enhances image contrast resolution. Esaote's innovative backing block increases ultrasound energy transmitted into the patient body, while maintaining very wide bandwidth (Figure 2). This directly translates into enhanced image sensitivity, higher resolution, useful penetration, and overall clarity from near field to far field. Automation and aggressive reprocessing (cleaning, disinfection and sterilization) trends require improved probe reliability. In response, Esaote developed a special protective layer placed beneath the acoustic lens which effectively protects the transducer and prevents fluid ingress. With these innovations, Esaote is delivering a new level of diagnostic confidence and accuracy in all major modes – whether fundamental imaging, Doppler, or tissue harmonic imaging – and across the entire range of clinical applications.

Figure 1 - Medical ultrasound transducers consist of array of small piezoelectric elements attached to three other structures: matching layers, backing block and acoustic lens.



1. Backing block
2. Piezoelectric elements
3. Matching layers
4. Acoustic lens

Figure 2 – New generation probes provide new levels of IQ performances in different types of modes – fundamental imaging, Doppler, and harmonic imaging.



Clinical use

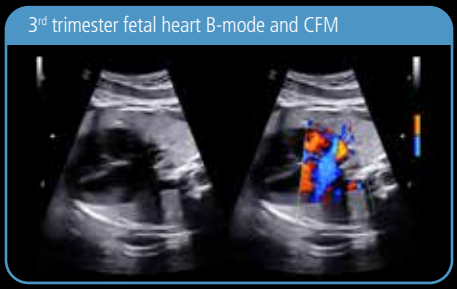
1st trimester pregnancy

1st trimester fetus intracranial structures

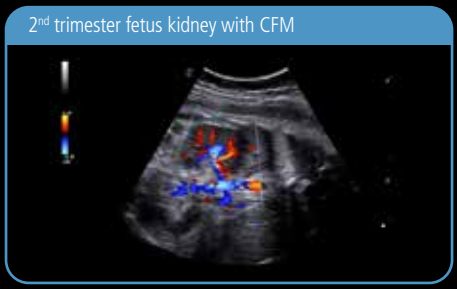
2nd trimester fetus diaphragm

2nd trimester fetal heart

3rd trimester fetal heart B-mode and CFM



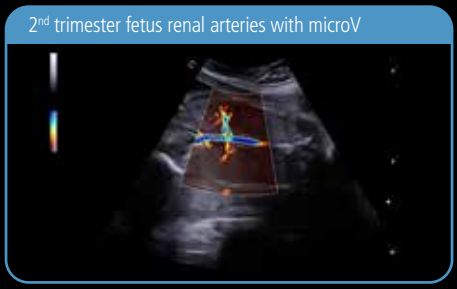
2nd trimester fetus kidney with CFM



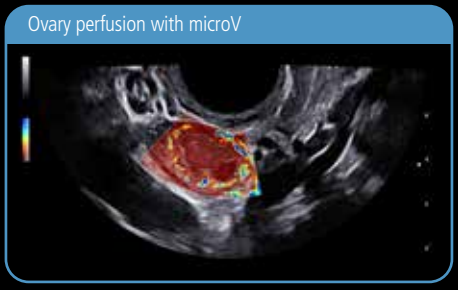
1st trimester twins

2nd trimester circle of Willis with microV

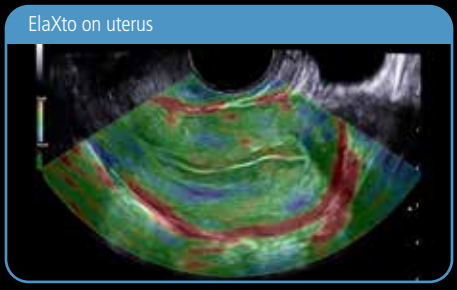
2nd trimester fetus renal arteries with microV



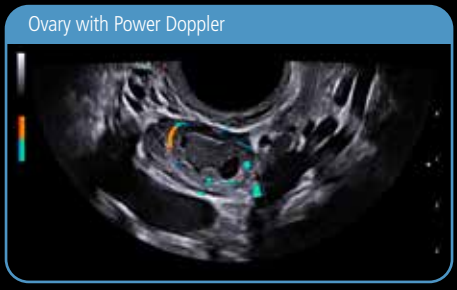
Ovary perfusion with microV



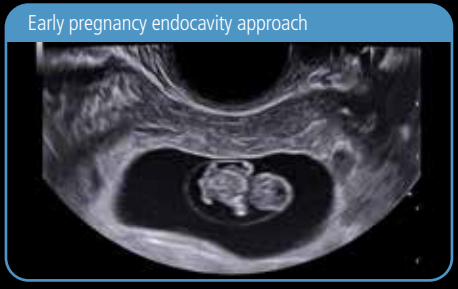
ElaXto on uterus



Ovary with Power Doppler

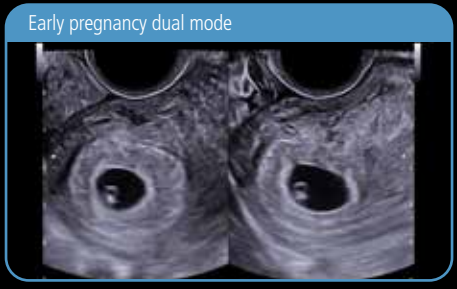


Early pregnancy endocavity approach

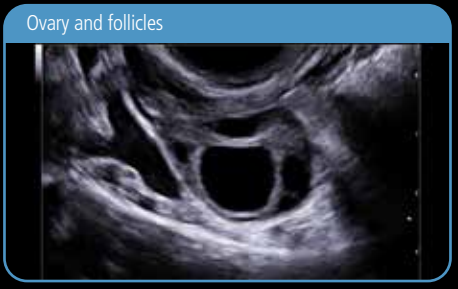


Early pregnancy fetus and gestational sac

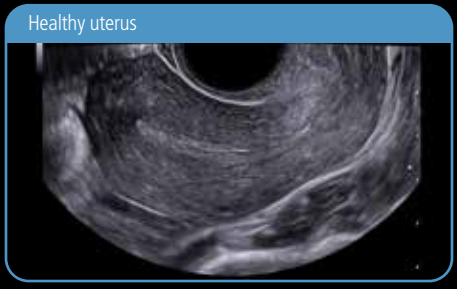
Early pregnancy dual mode



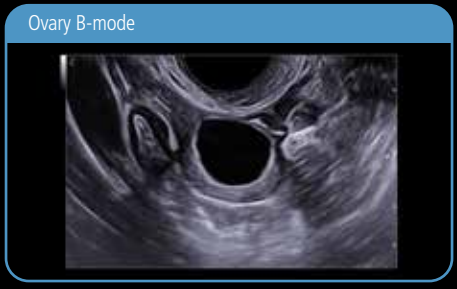
Ovary and follicles



Healthy uterus



Ovary B-mode



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Via Enrico Melen 77, 16152 Genova, ITALY, Tel. +39 010 6547 1, Fax +39 010 6547 275, info@esaote.com