

1 1 Other cases of food ultrasound test case application of ultrasonic non-destructive inspection equipment for industrial use, and tuna

Photo is a device for industrial ultrasonic nondestructive testing of Epoch1000i manufactured by Olympus. Feature is the product of two-dimensional visual assessment is possible by scanning sector of the Phased Array type. Development has been used in order to be commercialized for the purpose of detecting the damage microstructure of metal, metal to detect corruption of the aircraft as practical examples.

The following photo has been conducted to adjust the application experiment HS-1500 is left of the screen medical ultrasound equipment, industrial equipment without the right acoustic lens, is the situation under in preparation for observing the tuna now to 5MHz phased array method of Epoch1000i manufactured by Olympus



Gray scale image display HS-1500 medical ultrasound equipment

Ultrasonic non-destructive inspection equipment for industrial use Epoch1000i Switching system displays two color scale, gray scale Epoch1000i probe is small, its size is about 15 mm diameter shaped dice of one side

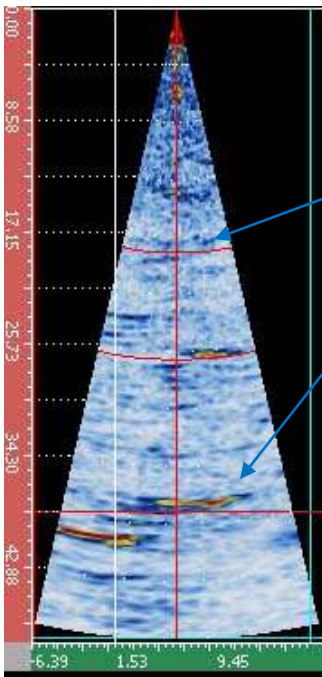
We carried out a distance correction stab a toothpick to konjac

Case of ultrasonic nondestructive testing equipment EPOCH1000i application experiment



Mozuku ripe specimens from Okinawa

Single ultrasonic transducer

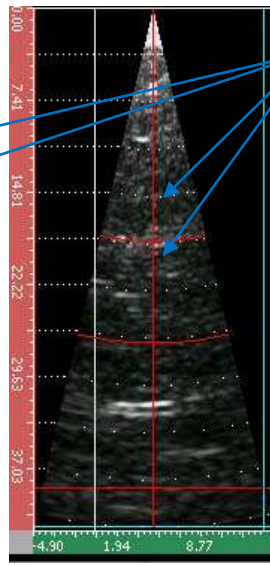
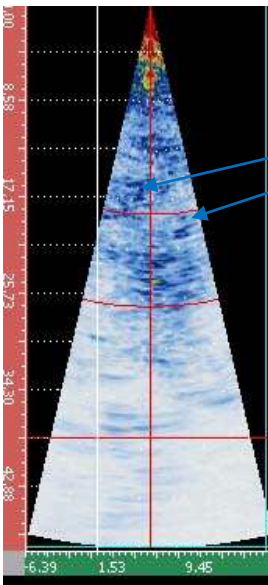


Suggests a state of mozuku video appears ripe

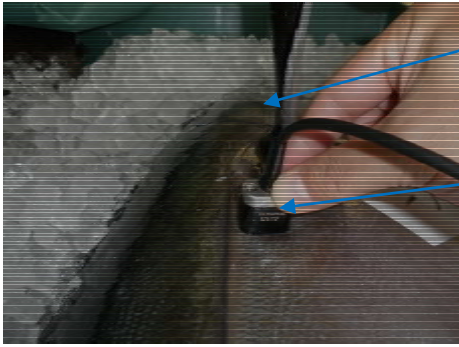


Red ginger samples

Single ultrasonic transducer

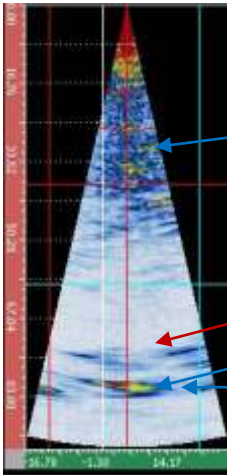


That visualize the quality of red ginger



Bigeye specimen

Single ultrasonic transducer



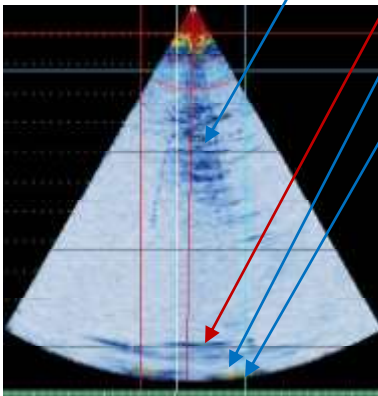
Chiai muscle

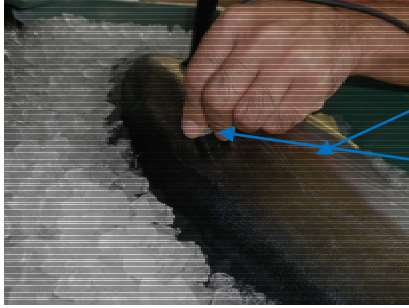
Wrap multiple reflection artifacts

Freshness is higher by observing the maintenance of muscle Chiai

Vertebra

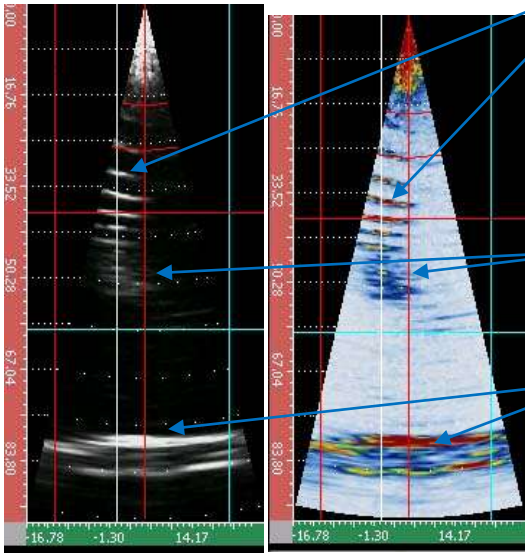
Because there is no body burnt spine reflected signal





Bigeye specimen

Single ultrasonic transducer



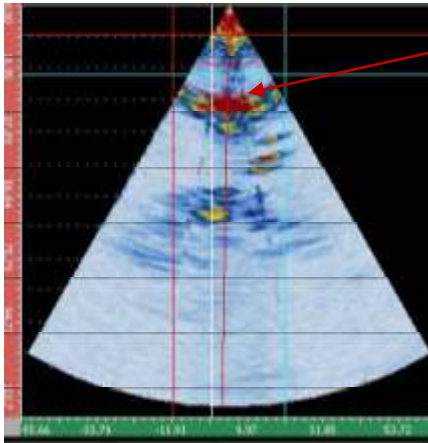
Muscle and sarcomere spacing has been observed clearly

Chiai muscle

Vertebra

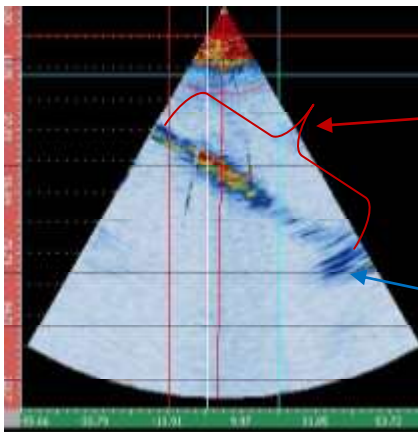
Because there is no body burnt spine reflected signal

Abnormal quality



Abnormally ultrasonic signal region

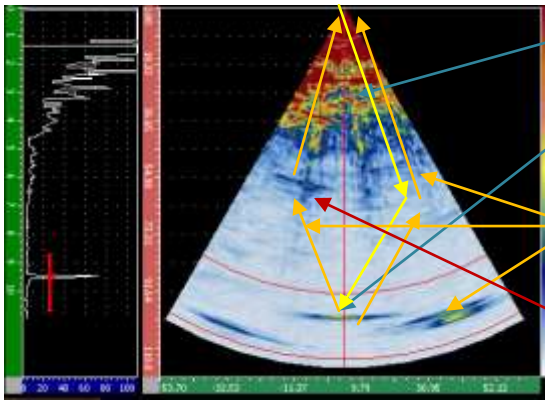
Area vertebra signal



Recognize the abnormal signal of the strip toward the vertebral

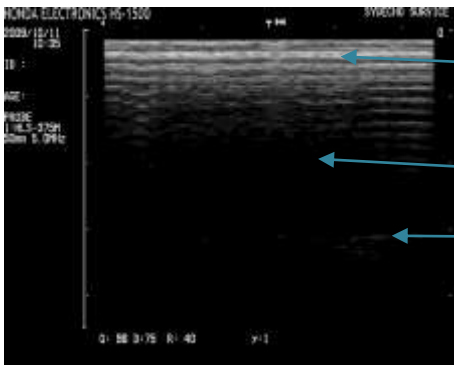
Area vertebra signal

Shows an image of canned mandarin orange. This is the initial testing was done in by OLIMPUS Have depicted the presence of a weak mandarin orange that has passed through the very boundary of the acoustic impedance difference. Multiple reflection artifacts can occur in the internal surface is relatively minor, or due to the shape of the cans, the filter function of the device Why there has been no elucidation.



Recognize the echo reflection indicates the presence of a mandarin orange Bottom reflection echo signal strength to admit the beam orthogonal unit Have caused the displacement of the bottom echo, false images by internal reflection canned False images caused by multiple reflections

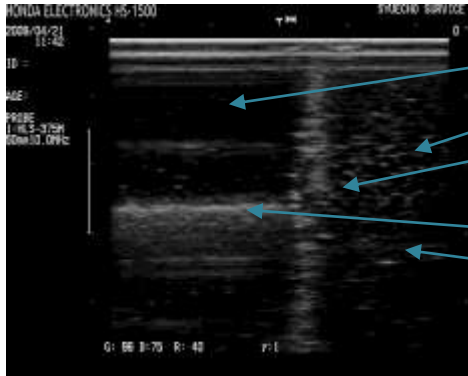
5MHz ultrasound image of an aluminum pack meat sauce HS-1500 in a manner similar equipment Recognize the reflected signal of the opposite side surface of an aluminum pack, inside the lesion characteristics, the observation of internal fluidity of the material was able to test at dynamic.



Multiple reflection noise is strong  
 No loss of echo signal  
 Admit slightly backwall echo

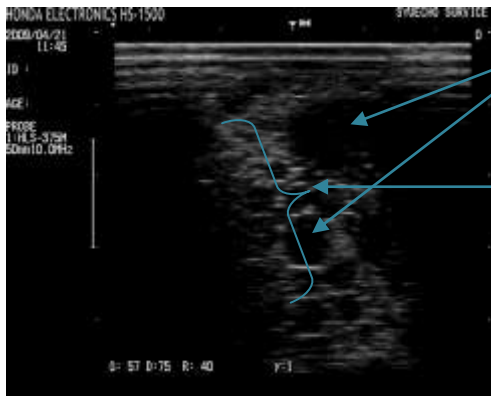


Image boundary surface put salad oil and water in plastic bottles



Clear, echo-free area of the water Gee nick echo area of the oil Boundary surface are shown in the left slope observed zonal high brightness, a cross-sectional findings 裂様. Wrap the bottom echo image bottled water Wrap oil bottle bottom echo image

(Transparency) is understood velocities and attenuation constant of water  
Image plane of the boundary surface of the central



Acknowledge the change in internal anechoic oval. Suggest that the water and sink to the oil bubble on the nature of ultrasonic Seen floating in the water fine structure echo Geonich. Suggest that the bubble of oil floating on water.

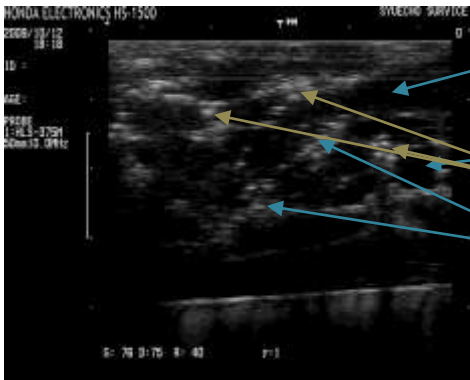
Determine the shape of the bubble with water at



10MHz ultrasound photo photo salted salted squid vinyl pack Pickled sauce is only echo geonich, the squid is the amount per body weight seen by the positive uniform hypoechoic area calculation.

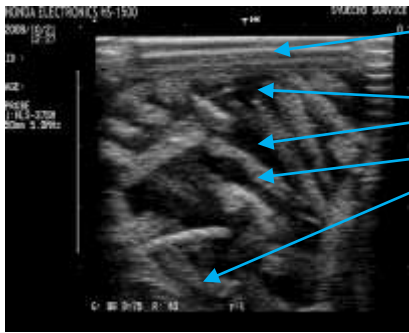
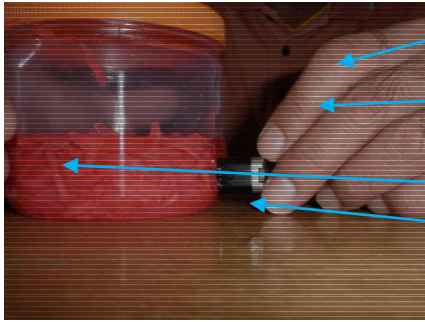


Ultrasonic probe  
A strip of squid  
Pickled sauce



Long axis of the strip squid, uniform low-echo  
Short axis view of the strip squid, uniform low-echo  
Small bubble of air admit  
Pickled sauce, coarse non-uniform high brightness

Red ginger



Plastic containers  
 Pickled sauce  
 Ultrasonic probe  
 Red ginger  
 Multiple reflection artifacts due to poor  
 adhesion probe A clear echo-free pickled  
 sauce Has become possible to observe  
 internal transparency and good ginger  
 with poor ultrasonic transmission is  
 fully exploited, which is negligible  
 attenuation Can be determined that  
 ginger was exploited

Bettarazuke only



Ultrasonic probe Small amount of moisture (who  
 pickled) Slice of radish Ultrasonic transparency can  
 not be confirmed the shape of the fillet of radish very  
 bad. Suggest a poor permeability of the fiber  
 component ultrasonic compression due to removal of  
 moisture. Raw radish Teisu the ultrasonic  
 transmission contains a lot of bad air quality only

## Noodles made from konnyaku



Ultrasonic probe

Internal plastic pack is filled with pickled sauce Shirataki-shaped Somen has been tightly sealed in

## しらたきの超音波像

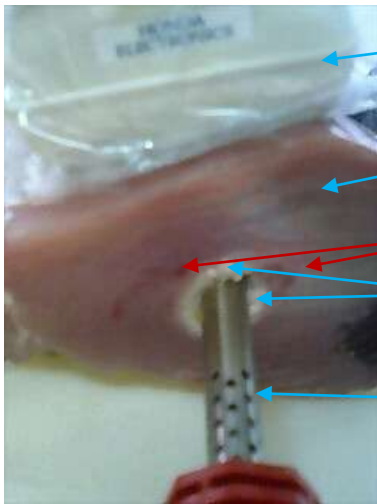


Be observed elongated been chained rosary is like fine granules shows a relatively low uniform echo reflection of Shirataki Pickled sauce is a clear echo-free

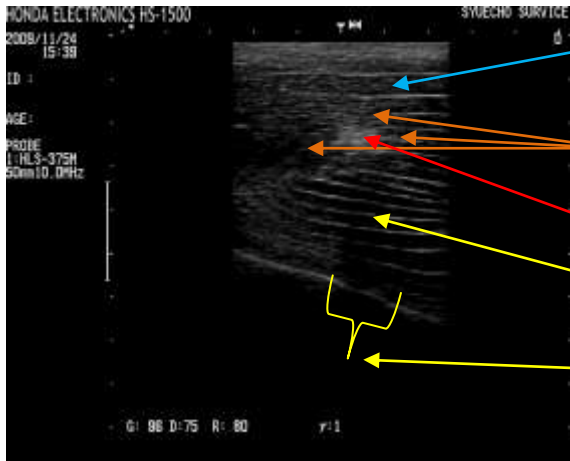
Experiment burnt tuna



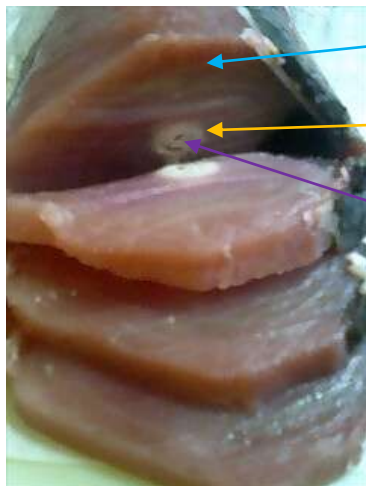
- HDD built-in color monitor
- Ultrasonic probe
- Simo block back in the yellowfin tuna
- Toro Plug in the soldering iron heating



- Ultrasonic probe
- Simo block back in the yellowfin tuna
- Toro
- Bleeding of blood
- Progress in the heat of the soldering iron
- burn Soldering iron



Distinct muscle fiber  
 Changes in the muscle fibers begin to be seen Obviously rough hyperechoic Degree of muscle obfuscated  
 Tic appearance of acoustic shadow



There is no significant change in particular  
 Obvious burnt Finds traces of soldering iron insert in the center

Burnt part will change roughly hyperechoic on ultrasound observation by experiment, can be seen the emergence of (shadow) according to the degree that the loss of backward echo Contraction biceps muscle of the upper arm extension ultrasound image (large biceps) Contraction are shown to promote uniformity and transparency becomes dense hypoechoic muscle cells Be observed in non-uniform rough hyperechoic when compared to muscle cell contraction stretching becomes sparse Of addition and subtraction can be determined and its expansion and contraction of the muscle area and observe real-time while performing bending and stretching exercises. In the case of internal bleeding were often seen the advent of echo-free space In addition, many may be observed in this way also the case of congestion.