Kongsberg Defence & Aerospace

TOPAS PS 18

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System specifications

Parametric sub-bottom profiler

The new **TOPAS PS 18** parametric sub-bottom profiler comprises of the following units:

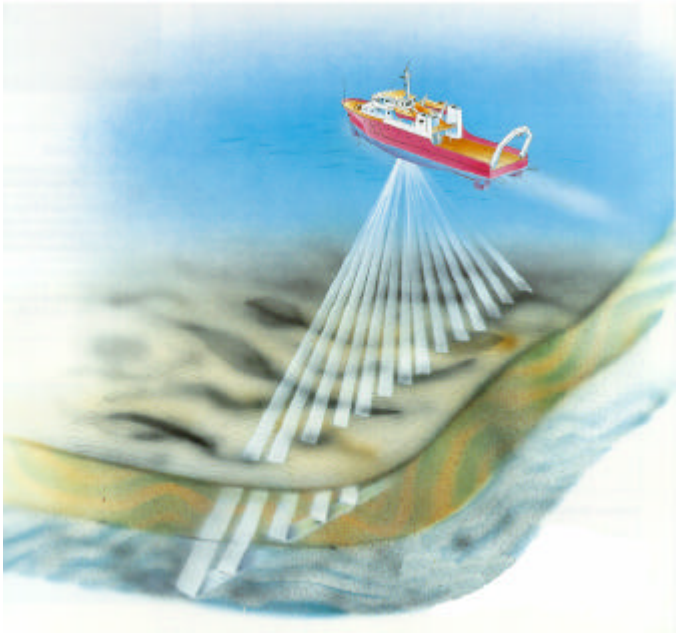
- **Transducer**
  - 8 x 16 channels
- **Transceiver Unit**
  - Linear, switched mode power amplifier
  - Built-in T/R-switch
- **Operator Console**
  - MMI
  - Real-time processing
  - PC-based platform (W2K, Linux etc.)
- **Optional**
  - MCR & beamformer (EM 120)

The system is designed for very high spatial resolution sub-bottom profiling in water depths from less than 20 meter to full ocean depth. The +80% relative bandwidth, low frequency signal is generated in the water column as a difference frequency signal by non-linear interaction between two high frequency signals (centred symmetrically around 18 kHz). Similarly, a sum frequency signal is also generated. However, only the low frequency signal is used for sub-bottom profiling.

The parametric sources have the advantage of generating a low frequency signal beam with no distinct sidelobe structure. The beam tapers off smoothly, which reduces the possibility of spurious signals due to sidelobes.

The transducer is hull mounted. This has the advantage of no deployment or recovery of tow-fishes during the survey, which results in more efficient survey time and improved positioning accuracy for the profile. Manoeuvrability of the survey vessel is also improved. In a "quiet" vessel, excellent profiling results are achieved even at survey speeds of +12 knots.

The system can operate with various signal waveforms for optimum performance: Typically Ricker pulses are used for very high resolution work; Chirp pulses are used for deep water, high

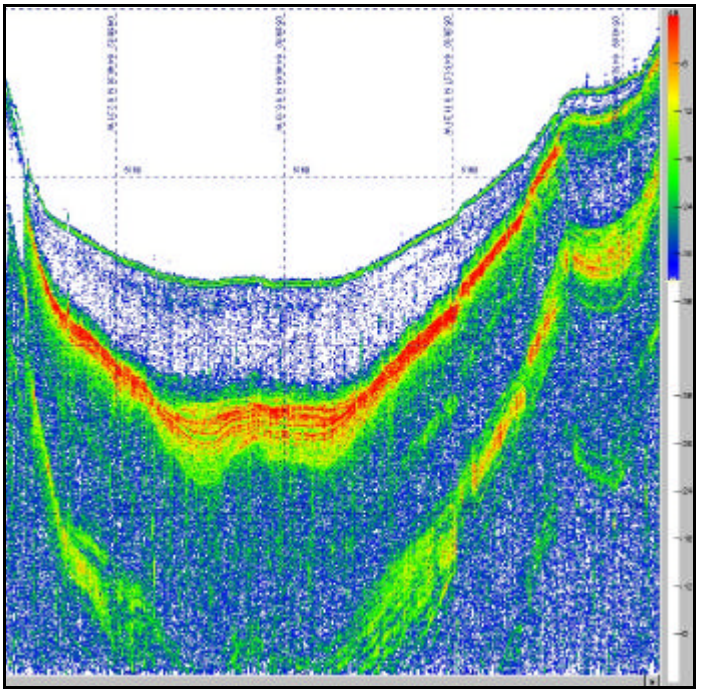


penetration work and CW pulses are used for narrow band, frequency sensitive work.

The transmitted beam is electronically stabilised in both roll, pitch and heave (requires input from a vertical reference unit) ensuring that the insonified area on the sea floor is accurately positioned.

The transmitter can be used in a sequentially beam steering mode covering a larger sector. This is of particular importance in object detection / location applications.

Penetration performance depends on sediment characteristics, water depth, transmitted signature etc. Penetration of more than 150 meters has been achieved in water depths of 1000 meters with a range resolution of typically 30 cm or better.



Real-time processing:
- Digital band pass filter
- Time Varying Filter (TVF)
- Wavelet filtering (optional)
- Spiking deconvolution filter (chirp)
- Matched filter (chirp)
- Dereverberation
- Time Variable Gain (TVG)
- Automatic Volume Control (AVC)
- Stacking (Trace mixing)
- Swell filter
- Manual/automatic gain
- Attribute processing
- Statistics

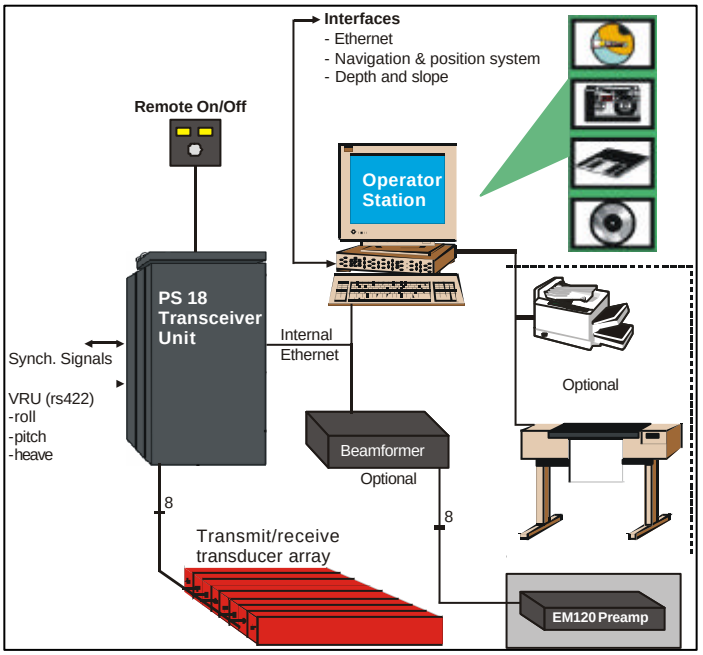
Additional off-line processing:
- Synthetic Aperture Sonar processing (SAS)
- tf-processing (optional)
- De-noising (optional)
- Sediment classification (optional)

System benefits:
- Narrow acoustic beam
- High bandwidth
- Chirp and short pulse modes
- No sidelobes
- Electronic beam steering
- Single ping, multi ping and burst ping modes
- Real-time processing
- Heave, roll and pitch stabilised beam
- Hull mounted transducer
- High spatial resolution
- Accurate location of objects etc.

System interfaces:
- Navigation input – NMEA 0183 (rs232/UDP)
- Depth/slope input – NMEA 0183 (rs232/UDP)
- Ethernet
- Line scan recorder – analogue/digital
- VRU (rs422)
- Synchronizing unit - TTL

Typical specification:

Primary frequency.....15-21 kHz
Secondary frequency.....0.5 – 6.0 kHz
Output power..... ≥32 kW
Beamwidth
-Primary .....~3.5 deg
-Secondary .....~4.5 deg
Source level (4 kHz) ..... ≥204 dB//µPa @ 1m
Range resolution ..... <0.3 m
Penetration capability..... >100 m
(depending on depth, ambient noise and sediment)
Depth range .....20 - 10,000 m
Beam steering sector - across.....80 deg
Beam steering sector - along.....20 deg



Specifications may change without further notice!

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