



TOPAS PS 120

Parametric sub-bottom profiler System specifications

The new portable **Kongsberg TOPAS PS 120** parametric sub-bottom profiler comprises of the following units:

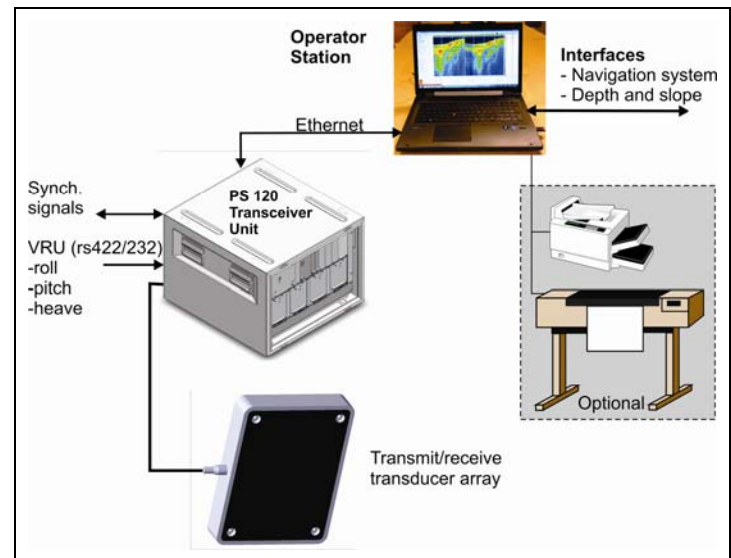
- **Transducer/hydrophone**
 - 4 x 6 channels
 - Three band receiving hydrophone
- **Transceiver Unit**
 - Linear, switched mode power amplifier
 - Low noise receiver with 24 bit ADC
 - High dynamic range; >110 dB
- **Operator Console**
 - MMI
 - Real-time processing
 - PC-based platform (Window)

The system is designed for very high spatial resolution sub-bottom profiling in water depths from less than 2 meters more than 400 meters. 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 (in the range from 70 kHz to 100 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 in the received signals.

The transducer may be hull mounted or fixed temporarily to the hull in other ways. This has the advantage of no deployment or recovery of tow-fishes is necessary during the survey, which results in more efficient survey time and improved positioning accuracy for the profile. Manoeuvrability of the

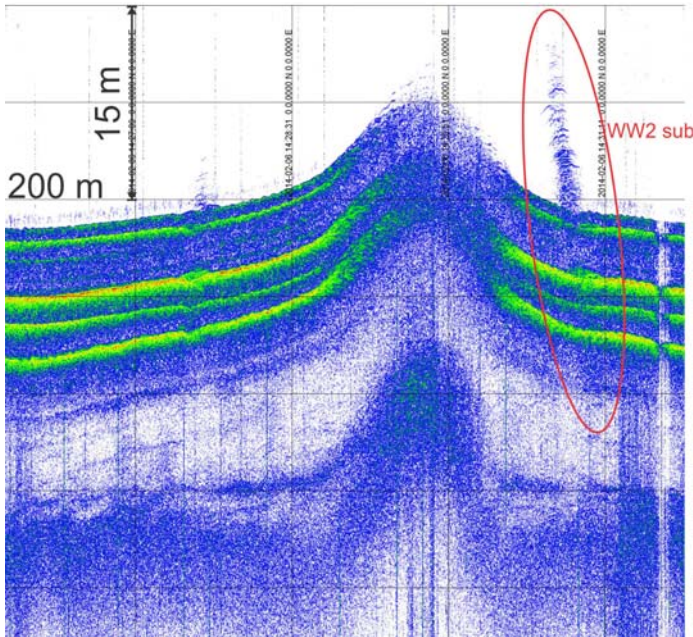
survey vessel is also improved. In a “quiet” vessel, excellent profiling results are achieved even at survey speeds of +12 knots.



The system can operate with various signal waveforms for optimum performance: 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 acoustic beam is electronically stabilised in both roll and heave (requires a vertical reference unit with analogue outputs) ensuring that theinsonified area on the sea floor is accurately positioned.

Penetration performance depends on sediment characteristics, water depth, transmitted signature etc. Penetration of more than 50 meters can be achieved in water depths up to more than 400 meters with a range resolution of typically better than 5 cm.



Real-time processing:

- Digital band pass filter
- Spiking deconvolution filter
- Matched filter
- Time Varying Filter (TVF)
- Dereverberation
- Time Variable Gain (TVG)
- Automatic Volume Control (AVC)
- Stacking (Trace mixing)
- Swell filter
- Manual/automatic gain
- Attribute processing
- Statistics
- Power Spectral Density (PSD) display

Additional off-line processing:

- Synthetic Aperture Sonar processing (SAS)
- Interpretation/Digitization of interfaces
- TOPAS tracks displayed/selected in SIS
- tf-processing (optional)
- De-noising (optional)
- Sediment classification (optional)

System benefits:

- Narrow acoustic beam
- High bandwidth
- Chirp and short pulse modes
- No sidelobes
- Single ping, multi ping and burst ping modes

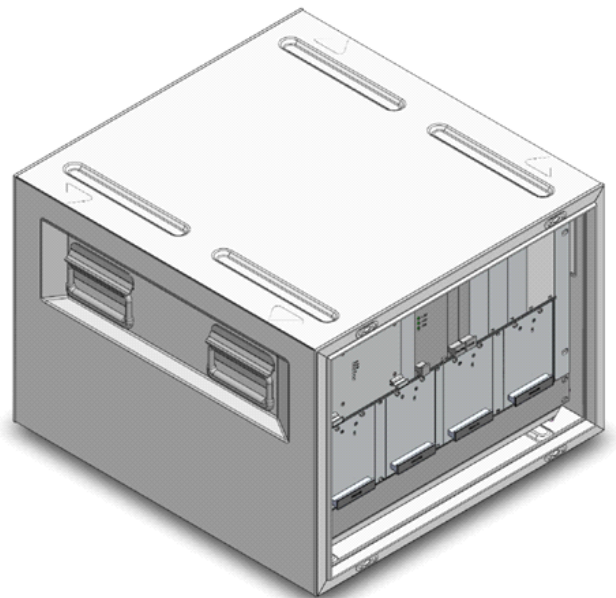
- Real-time processing
- Heave, roll and pitch stabilised beam
- Hull / over-the-side mounted transducer
- High spatial resolution
- Accurate location of objects etc.
- Compact system

System interfaces:

- Navigation input – NMEA 0183 (rs232)
- Depth input/output – NMEA 0183 (rs232)
- Ethernet
- Line scan recorder – analogue/digital
- VRU (rs422/rs232)
- Synchronizing unit (K-sync) - TTL

Typical specification:

Primary frequency.....	70-100 kHz
Secondary frequency.....	2 - 30 kHz
Pulse lengths	0.04 – 30 ms
Output power	>8 kW
Beamwidth - Primary	~3.5 deg
Beamwidth -Secondary	4 - 6 deg
Source level (12 kHz)	>202 dB//µPa @ 1m
Dynamic range	>110 dB
Range resolution	<0.05 m
Penetration capability.....	>50 m
Depth range.....	<2 - >400 m
Beam steering sector – across	12 deg
Beam steering sector – along	8 deg



Specifications may change without further notice!

KONGSBERG DEFENCE SYSTEMS

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