

# Hydrocarbon Sensing System

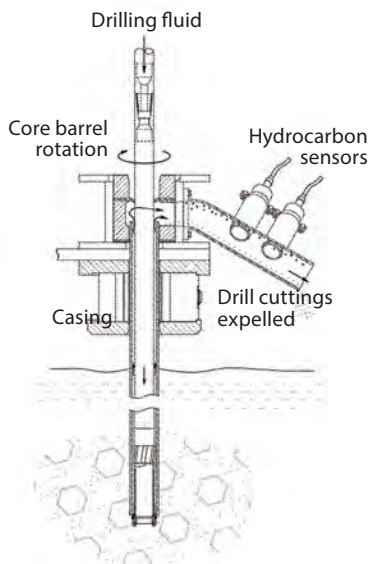
## Proven Technology

Benthic's prototype Hydrocarbon Sensing System (HSS) analyses drill returns for the presence of hydrocarbons as they pass through PROD before being vented on the seafloor.

The System, in its present form, includes two hydrocarbon sensors in line with the drill returns path. Drill returns, composed of seawater drawn from above PROD and pumped down the drill hole, mixed with cuttings created at the drill bit, also contain any gas or dissolved hydrocarbons that were held in the interstices between sediment particles.

Using tool geometry, drill fluid flow rate, and borehole progression rate, the relative concentration of hydrocarbons sensed can be used to estimate the in situ hydrocarbon composition of the material being drilled. Infiltration rate of gas into a borehole may also be estimated by water flushing and monitoring gas concentration over set time intervals.

The System provides an early warning of potential shallow gas hazards and identifies the presence of methane hydrate concentrations. Gas origin, approximate concentration and approximate depth of intercept are logged versus borehole depth in real time and displayed on monitors in the control unit on board the survey vessel. Data is stored in digital format and can be combined with core logs and other in situ test data.



*HSS Schematic operating principle*

## Technical Data

Low Range Sensor	
Type	METS
Depth Rating	0–3,000m
Temperature Range	2 – 20 deg Celsius
Methane Sensitivity	300 µmol/l – 10 µmol/l
High Range Sensor	
Type	IR-METS
Depth Rating	0–3,000m
Temperature Range	-2 – 60 deg Celsius
Methane Sensitivity	10 µmol/l – 1 µmol/l

