WHAT IS CLAIMED IS:

1. A system for detecting the passage of an object in a pipeline, the system comprising:

a detector configured for arrangement about and secured to an external surface of the pipeline and including at least one magnetometer sensor;

a shielding surrounding the at least one magnetometer sensor; and

a microcontroller in communication with the at least one magnetometer sensor and having an adaptive thresholding detection means for processing a magnetic flux data stream collected by the at least one magnetometer sensor and detecting a passage event;

the adaptive thresholding detection means calculating a baseline estimate and a noise estimate and using the baseline and noise estimates to determine an upper threshold and a lower threshold, the upper threshold being used to detect passage events and the lower threshold being used to switch off the detector.

2. A system according to Claim 1 further comprising a second magnetometer sensor housed by the detector and being offset relative to said at least one magnetometer sensor.

3. A system according to Claim 1 further comprising said adaptive thresholding detection means including a low pass filter.

4. A system according to Claim 1 further comprising means for preventing detection by the detector of a passage of an object in a pipeline.

5. A system according to Claim 1 further comprising means for adjusting a position of the detector relative to the external surface of the pipeline.

6. A system according to Claim 1 ~~further comprising~~ wherein said shielding is ~~being~~ at least one of a magnetic permeable shielding and an electrical insulating shielding.

7. A system according to Claim 1 further comprising a backup power source, said backup power source configured to break electrical contact prior to exposure to ambient environment.

8. A method for detecting the passage of an object in a pipeline, the method comprising the steps of:

securing ~~positioning~~ a detector housing at least one magnetometer sensor on an exterior surface of the pipeline;

collecting a magnetic flux data stream from the at least one magnetometer sensor;

processing the magnetic flux data stream through an adaptive thresholding detection algorithm; and

using the processed magnetic flux data stream to detect a passage event;

wherein the adaptive thresholding detection algorithm calculates a baseline estimate and a noise estimate and uses the baseline and noise estimates to determine an upper threshold and a lower threshold, the upper threshold being used to passage events and the lower threshold being used to switch off the detector.

9. A method according to Claim 8, said processing step further comprising the step of passing the magnetic flux data through at least one low pass filter.

10. A method according to Claim 8, said processing step further comprising the step of removing outlier data from the magnetic flux data stream to provide an outlier-free magnetic flux data stream.

11. A method according to Claim 10, said removing step including the steps of:

removing a baseline value from the magnetic flux data stream; and

limiting the magnetic flux data stream to a value no greater than an outlier limit.

12. A method according to Claim 10 further comprising the step of passing the outlier-free magnetic flux data stream through a first low pass filter to estimate a baseline.

13. A method according to Claim 22 further comprising the step of passing the outlier-free magnetic flux data stream through a low pass filter to produce a noise estimate.

14. A method according to Claim 10 further comprising the step of passing the outlier-free magnetic flux data stream through a low pass filter to produce a smoothed magnitude of the outlier-free magnetic flux data stream.

23. A system for detecting a passage of a pipeline pig in a pipeline comprising:

a detector configured for arrangement about an external surface of the pipeline and including a housing having at least one magnetometer sensor;

a shielding surrounding the at least one magnetometer sensor;

a microcontroller in communication with the at least one magnetometer sensor and having an adaptive thresholding detection means and a first, a second, a third, and a fourth low pass filter;

the adaptive thresholding detection means removing outlier data from a magnetic flux data stream to provide an outlier-free magnetic flux data stream;

the first low pass filter processing the outlier-free magnetic flux data stream to estimate a baseline;

the second low pass filter processing the outlier-free magnetic flux data stream to produce a noise estimate;

the third low pass filter processing the outlier-free magnetic flux data stream to produce a smoothed magnitude of the outlier-free magnetic flux data stream;

the fourth low pass filter processing the smoothed magnitude of the outlier-free magnetic flux data stream to determine the length of a detection event.