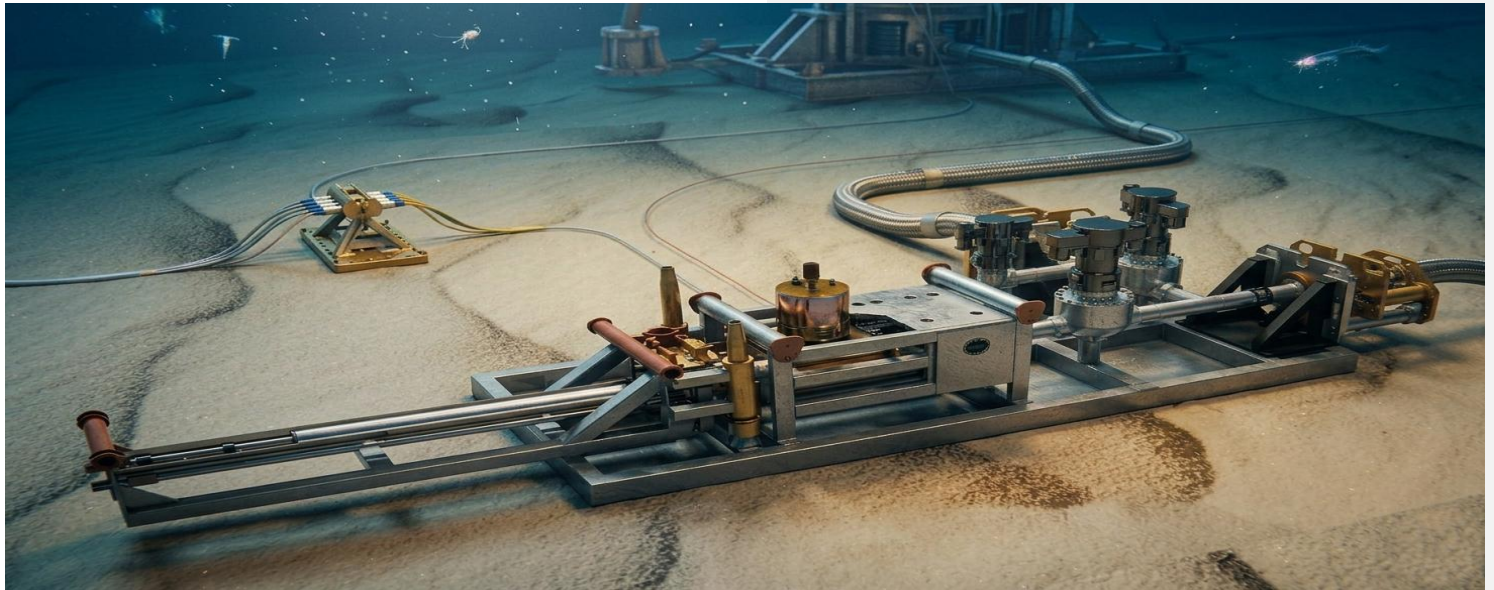


Subsea Automatic Pig Launcher (SAPL)



Product Description

Lintech Subsea Automated Pig Launcher (SAPL) is an operational pigging system designed for individual subsea launching of pigs, from a barrel/cassette containing several pigs to a pig receiver. The process is controlled from a remote control center, typically a platform. The SAPL is now under qualification and will be first of its kind for subsea operations.

Lintech has developed operational pigging systems, which can be used for both cleaning and intelligent pigging without causing production shut down. The operation can be performed from subsea to topside or from subsea to subsea, such as:

1. Intelligent inspection pigging operations for inspection of the pipelines, e.g. monitoring of corrosion inside the pipeline.
2. Cleaning of pipelines to keep the pipeline open for production and remove wax, slug or other debris.



TECHNICAL SPECIFICATIONS

DESIGN LIFE:	25 years
PIG KICKER MEDIUM:	Well Stream/MEG
PIPELINE OD:	6" - 42"
NUMBER OF PIGS PER CASSETTE:	2 - 10

Product Benefits

PRE-COMMISSIONING PIGGING

- Field proven technology
- Use field proven topside pigging technology with standard PLR design, interfaces and operation.

High reliability

- Controlled and simple pigging operations.
- Lay down pad-eyes on PLR, no need for (FLT) flow line lifting tool.

As a response to the need for smarter, more automated and less expensive subsea solutions, LINTECH is qualifying the SAPL for remote launching of individual pigs, from a cassette containing 2-10 pigs. The pig launcher control system will interface with a topside control system using a standard communication interface.

Interfaces

The base case interface for the SAPL is a PLEM structure. Additionally, the SAPL offers a possibility of being installed directly onto the manifold structure or connected to a manifold via a spool.

Internal pig cassette

The internal pig cassette, which holds several pigs and enables easy replacement, can be designed to handle:

- Pre-commissioning and commissioning pigs.
- Wax removal pigs.
- Inspection pigs

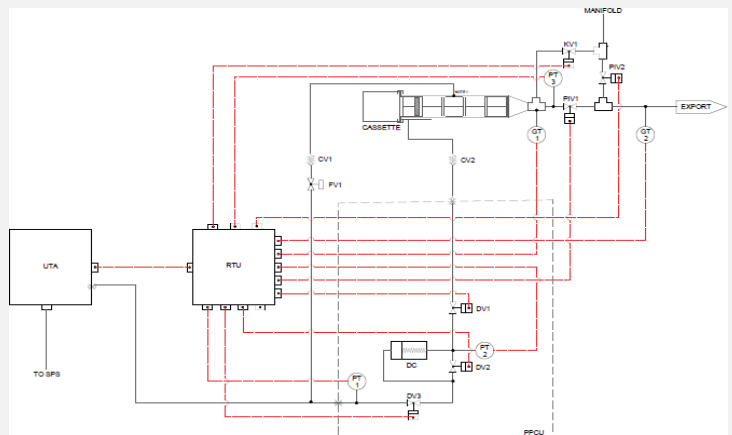
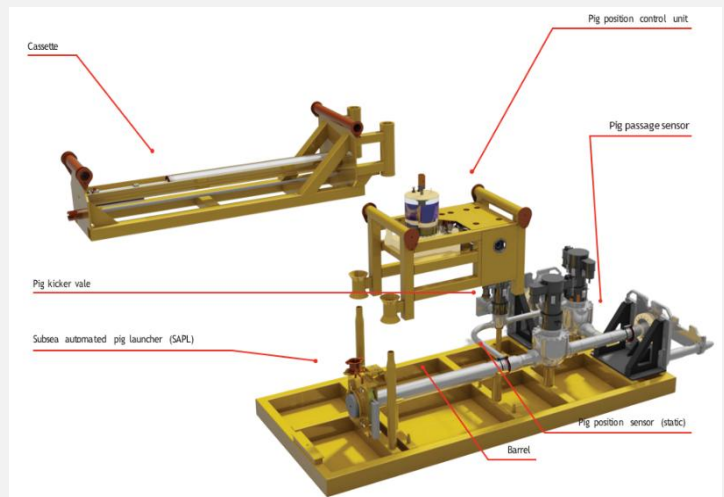
Key elements

The SAPL comprises the following key elements:

- Insert cassette for storing pigs to be launched. It is inserted into the SAPL in a pipe-in-pipe arrangement, having a pressure retaining connector in its rear end and a hydraulic stab for fluids to the drive pig
- A drive pig (or piston) arranged at the rear end of the cassette, pushing pigs to be launched stepwise forward
- A displacement cylinder feeding a predefined volume to the drive pig • Piping, valves and actuators
- Magnetic Pig Position Detector, one off to verify that the first pig is in a launch position. A second to verify that the pig has passed the production Tee and is in the well stream
- Subsea Control Module • Electrical and hydraulic flying leads with associated connectors and MQC plates
- PLEM, Spool and Umbilical

Key Features

- Subsea launching (no platform required)
- Remote launching (no vessel or ROV required)
- Multiple-pig cassettes reduces the number of trips by service vessel
- No round trip pigging required i.e. improved production uptime, no need for dual pipelines
- Inspection pigging from the same unit
- Pre-commissioning operations possible with ROV support/control only
- Additional sensors may be incorporated for redundancy
- The SAPL include dual barriers to sea, ensuring a robust and sustainable system with an ROV operated ball valve incorporated to allow safe replacement of pig cassette during production



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Office/Workshop : Wira Jatim Industrial Estate, Mastrip 70, Karangpilang, Surabaya, Indonesia 60221
Lintech Seaside Facility: Daendels Street, Paciran Cape Lamongan , 74 km from Surabaya, Indonesia
Phone: +62-31-7666 891 Fax: +62-31-7664 604
E-MAIL : admin@lintech.co.id WEBSITE: <http://www.lintech.co.id> ; <http://www.lsf.co.id>