

# Wärtsilä SafeStart

## A slow turning system that detects hydrolock



Hydrolock occurs when a cylinder is completely or partially filled with an incompressible fluid. In the worst case, hydrolock can damage the connecting rod and crankshaft. Slow turning reduces these risks significantly. In order to further reduce the risks of hydrolock during start up, we developed the Wärtsilä SafeStart slow turning system. The system is a standard feature in our newly built engines and is also available as an upgrade for Wärtsilä 16V34SG and 20V34SG engines manufactured before 2009 as well as Wärtsilä 32 engines.

### **STARTING AN ENGINE USING SLOW TURNING**

When starting an engine using slow turning, the slow turning valve is activated first. The goal is to rotate the engine at a lower speed to prevent any possible damage. Slow turning is completed when the engine has rotated through the configured number of revolutions in a pre-determined amount of time.

After a successful slow turn, the start air valve opens and the engine starts. If the slow turning procedure fails, a failure alarm will sound and engine start up will be aborted. The engine should then be inspected to determine the cause of the failure.





### TECHNICAL CONCEPT

Implementing Wärtsilä SafeStart requires:

- At minimum a UNIC engine control system
- A solenoid valve for slow turning
- A start improvement set for Wärtsilä 32 engines, if not existing

SafeStart also includes a start improvement function for Wärtsilä 32 engines where cranking revolutions are increased during the start sequence, significantly improving start reliability.

The volume of control air in the air block channel is reduced by installing pipe inserts, improving the accuracy of air injection during a start. The extent of the automation system upgrade depends on the age of the engine.

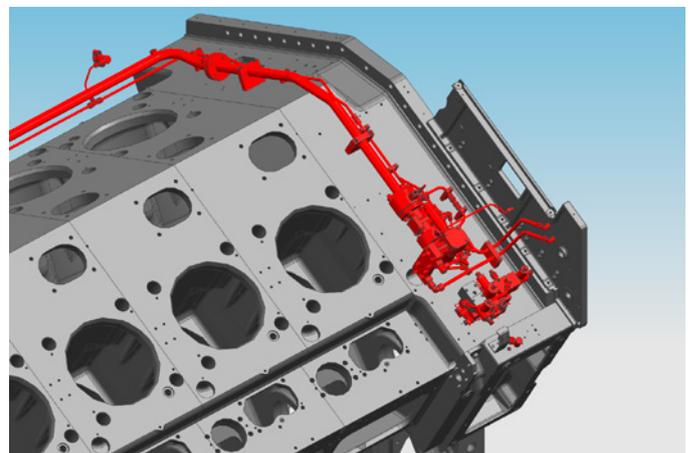
### SCOPE OF SUPPLY

Wärtsilä SafeStart is available for Wärtsilä 16V34SG, 20V34SG, and Wärtsilä 32 engines and requires a UNIC control system.

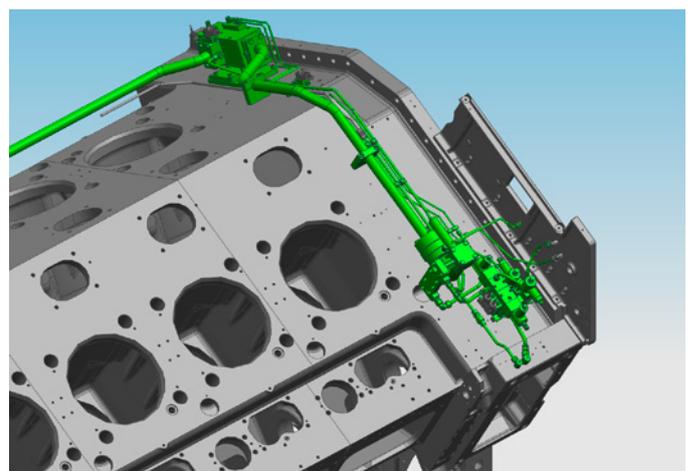
The scope typically covers:

- Minor software modification for the UNIC engine control system
- Solenoid valve for slow turning function
- Mechanical modification set for starting and control air piping (see images on the right)

Get in touch to find out more about implementing reliable and safe slow turning.



The engine without slow turning, no air block



The engine with slow turning, no air block

[wartsila.com](http://wartsila.com)

WÄRTSILÄ® is a registered trademark. Copyright © 2018 Wärtsilä Corporation. Specifications are subject to change without prior notice.