



Ships in Operation 2020 and beyond

Mats Ottosson

Manager, Global Service Sales

BU Marine Separation & Heat Transfer

Lifetime vessel performance - Peace of mind

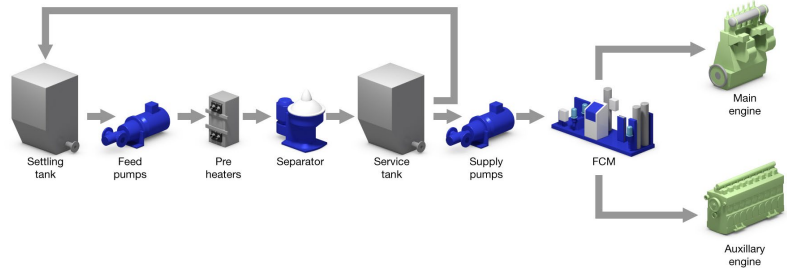


* Uptime

* Availability

* Optimization

* Compliance



Emergencies are unplanned



...and time is of the essence

Having your vessel or its operations at a standstill costs money. If an emergency occurs outside the office hours of your Alfa Laval Sales Company, there's simply no time to wait.

Alfa Laval therefore offers direct access to our knowledgeable international marine service team.



Alfa Laval Marine Emergency Service

A complement to your regular service channels

- * For emergencies when your local Alfa Laval sales company is not possible to reach
- * 24/7 phone and e-mail hotline
- * Easy arrangement of remote troubleshooting and field service when needed



Fuel Quality: Cat Fines

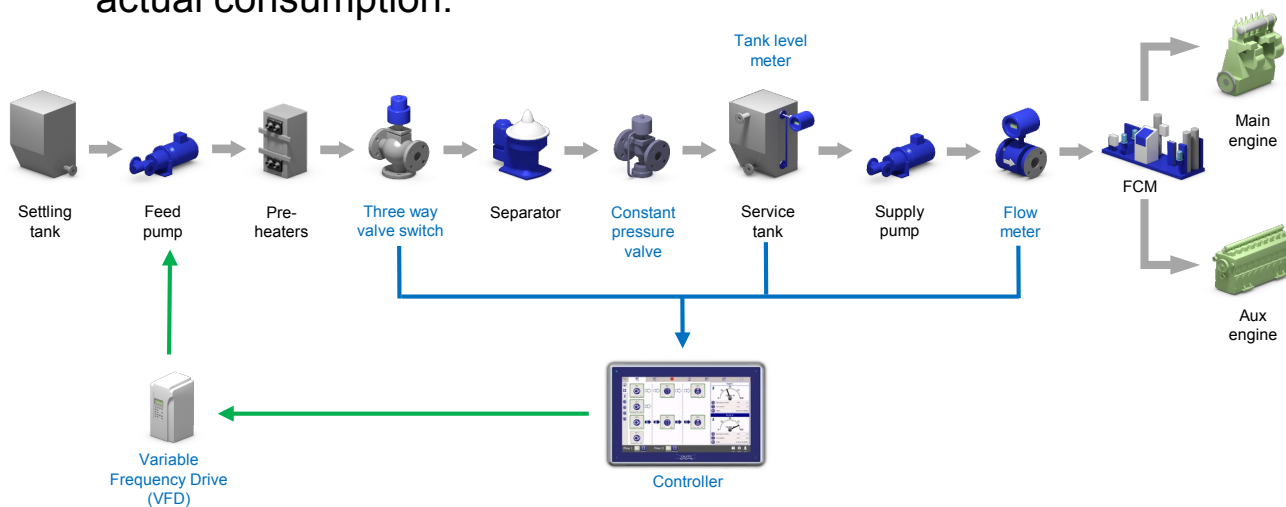
- Catalytic fines cause serious wear to the engine
- MAN investigation looked at **226 vessels** with high-wear cylinder liners:
 - **190 cases** involved cat fines
 - High levels of cat fines can wear down a cylinder liner in few hours
 - Expensive to repair!



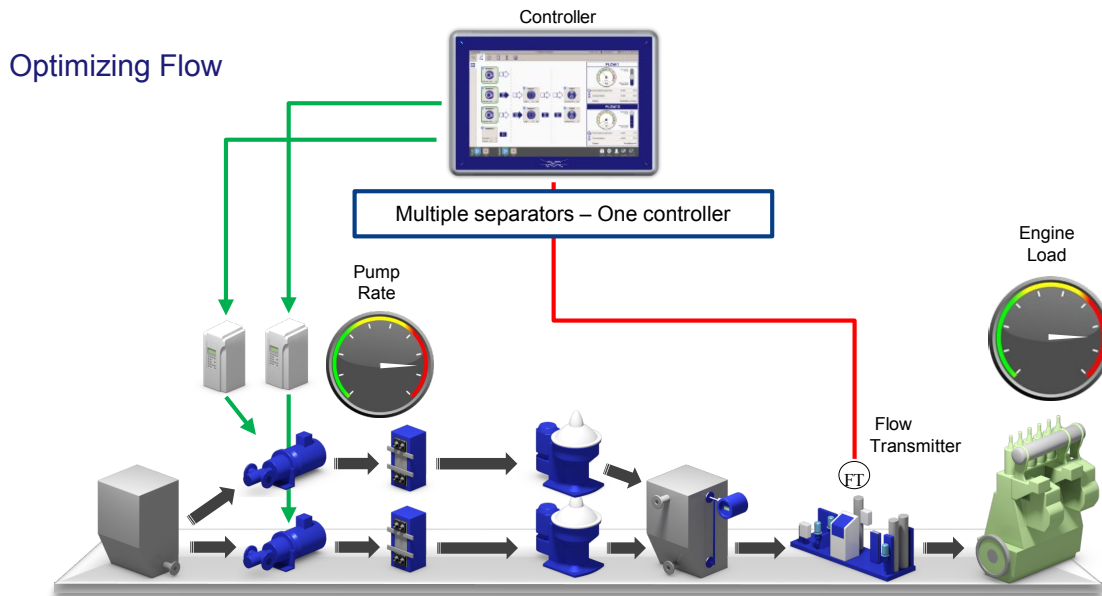
FlowSync 1.0



- * Reducing the Flow by synchronizing the throughput with the actual consumption.



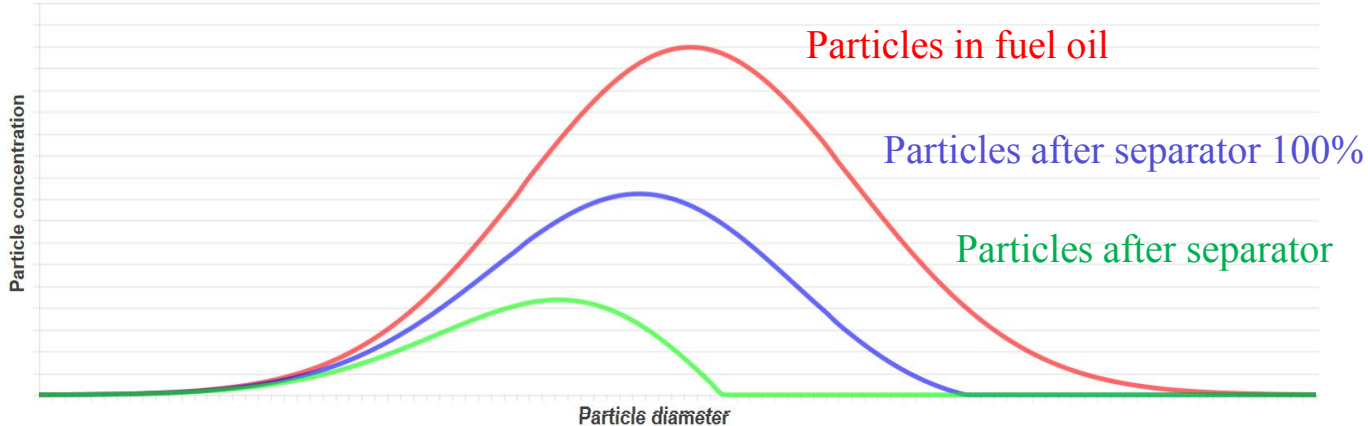
FlowSync 1.0 – Operating Principle



Separation efficiency



By reducing the flow rate, the separation efficiency increases



Separator 9X8

ALCAP

Alfa

Laval

Clarifier

Purifier



Separation Efficiency Upgrade

- ✱ Upgrading the disc stack for S-machines
 - New improved design
 - Higher capacity than the former S-machines
 - CFR approved



FCM One

Fuel conditioning system for diesel engines



The FCM One fuel conditioning system.

ACS Automated Changeover System



- * Light fuels, ULSFO / VLSFO
- * Cooling of the fuel



Moatti 10 μ upgrade



* Last line of defence before the engine

Service Letter SL2017-638/DQJA

MAN Diesel & Turbo



Fuel fine filter in front of engine

Removal of cat fines from the fuel has to be done in fuel separators because of the substantial amount of dirt and cat fines present in the fuel.

However, as described above, a number of factors may impact the separation efficiency. Therefore, to protect the engine, we specify a 10- μ m filter before the engine as standard. The filter should be a max. 10- μ m absolute full-flow automatic back-flushing filter positioned in the high-temperature fuel recirculation system, see Fig. 8. Alternatively it can be positioned in the supply system.

In summary, we have seen increased reliability and low wear rates when:

1. 10- μ m filter is installed in front of the engine
2. filter cleaning cycles are logged on a daily basis
3. action is taken to improve the fuel cleaning if the cleaning cycle number increases to higher than normal

More information

More detailed information on cat fines, cat fines removal and wear in the engine caused by cat fines can be found in the separate MAN Diesel & Turbo paper: "Cat fines – Impact on engine wear & How to reduce the wear".



Service Letter SL2017-638/DQJA

MAN Diesel & Turbo



Action code: WHEN CONVENIENT

Cleaning of Heavy Fuel Oil and Maximum 0.10% Sulphur Fuels How to remove cat fines

SL2017-638/DQJA

February 2017

This SL replaces SL2005-452/KEA

Concerns

Owners and operators of MAN B&W two-stroke marine and stationary diesel engines.
For Hiseley four-stroke engines, reference is made to SL2017-640/LNN.

Summary

Cat fines are small, very hard particles found in marine fuel. Cat fines can wear the engine down very fast, and they must be removed from the fuel by the fuel cleaning system on board the ship.

Recommendation:

Max. 15 ppm Al + Si at engine inlet for short periods



Cat fines (< 4 μ content) entering the engine.

Dear Sirs

Alumina particles entering the combustion chamber of two-stroke diesel engines are a cause of wear. Cat fines (aluminosilicates) are small, very hard particles originating from the refining process. In case of inefficient cleaning onboard, cat fines may enter the engine with the fuel and cause wear. The latest ISO marine fuel standard specifies levels of up to maximum 80 ppm Al + Si in the fuel (ISO 8217). Such a level would cause high wear compromising reliability in the combustion chamber, and so the fuel must be cleaned on board the ship before it reaches the engine.

The Service Letter specifies the recommended maximum acceptable level of cat fines entering the engine, which is as follows:

- Always keep the level as low as possible and, max. at 15 ppm Al + Si at engine inlet for short periods.

Some guidelines on optimal operation are also given:

- Remove the cat fines from the fuel by setting a high temperature (min. 80°C) and a low flow in the fuel separators.
- Enable proper cleaning of the tanks in service by raising the overflow pipe in the service tanks go to the bottom of the tank, and/or by using a separate line to recirculate the fuel to the settling tank.
- To be warned when the fuel system is not operating optimally, a 10- μ m abs. fine-filter should be installed in front of the engine.

More detailed information can be found in Ref. [1]. For questions or inquiries regarding the recommendations in this letter, contact our Operation Department at: technical@man-dieselturbo.com

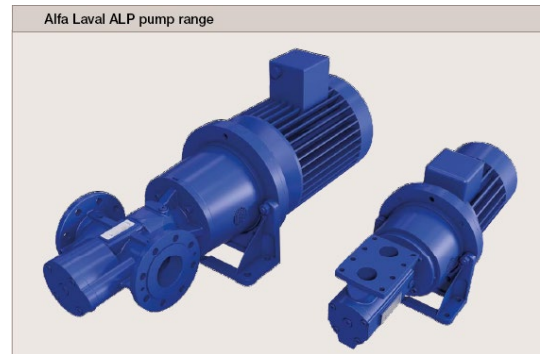
Yours faithfully

Michael Jensen
Michael Jensen
Vice President Engineering

Stig S. Jensen
Stig S. Jensen
Senior Manager Operation

CIP and Pumps

- * Separator / Heat exchanger
- * Less work
- * Less wear on the parts
- * Increased efficiency
- * Size 0015 to 0280
- * Delta p 6 or 10 bar. Max 16 bar





Alfa Laval Connected vessel

Alfa Laval PureBilge Connect



Automated reporting system for overboard discharge.



Graph representing PPM levels during the whole discharge period and total discharged volume

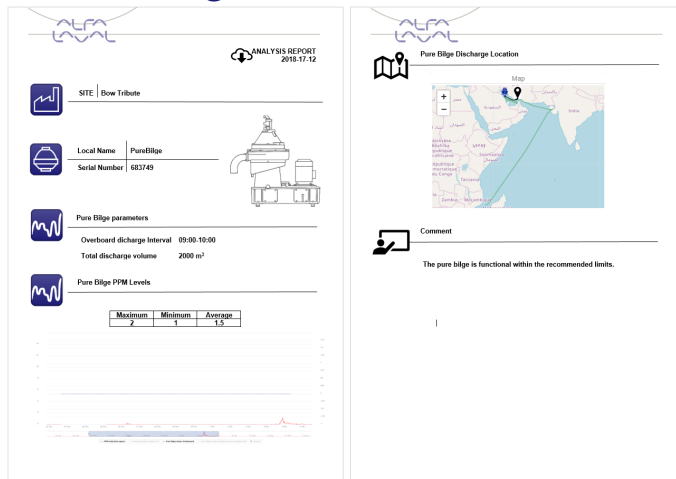


GPS locations during open and closing of discharge valve and a map plotting the ships position.



Report will show discharge date and time stamps linked to machine serial number

Virtual log PPM





2020年以降の船舶のオペレーション

Mats Ottosson

Manager, Global Service Sales

BU Marine Separation & Heat Transfer

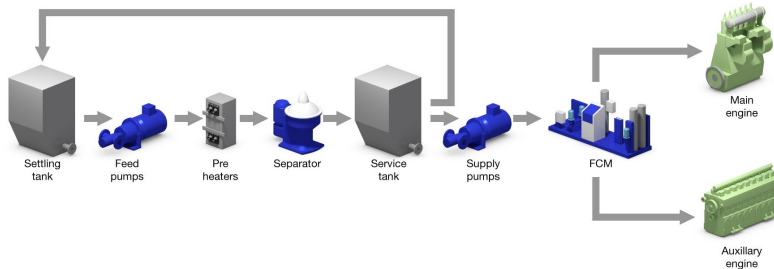
Peace of mind

* 稼働時間

* いつでも稼働できる

* 最適化

* コンプライアンス



緊急な事態は予知できません



...そして迅速な対処が不可欠です。

船舶または運用ができない状態は費用が無駄になります。もし、日頃、皆様をカバーしているアルファ・ラバルの営業時間外に緊急事態が発生した場合、ただ単に待つだけではできません。

そのような時は、アルファ・ラバルは我々の知識を有したインターナショナルマリンチームへ直接コンタクトを取ることをご提案します。



Alfa Laval Marine Emergency Service

皆様へのサービスを完全なものにします。

- ＊ 緊急事態時に、皆様の日頃の窓口であるアルファ・ラバルに連絡が取れないとき
- ＊ 24/7 電話とメールで
- ＊ 遠隔でのトラブル解決と必要であれば技師の手配を直ちにできます。



燃料油の性質：触媒粒子

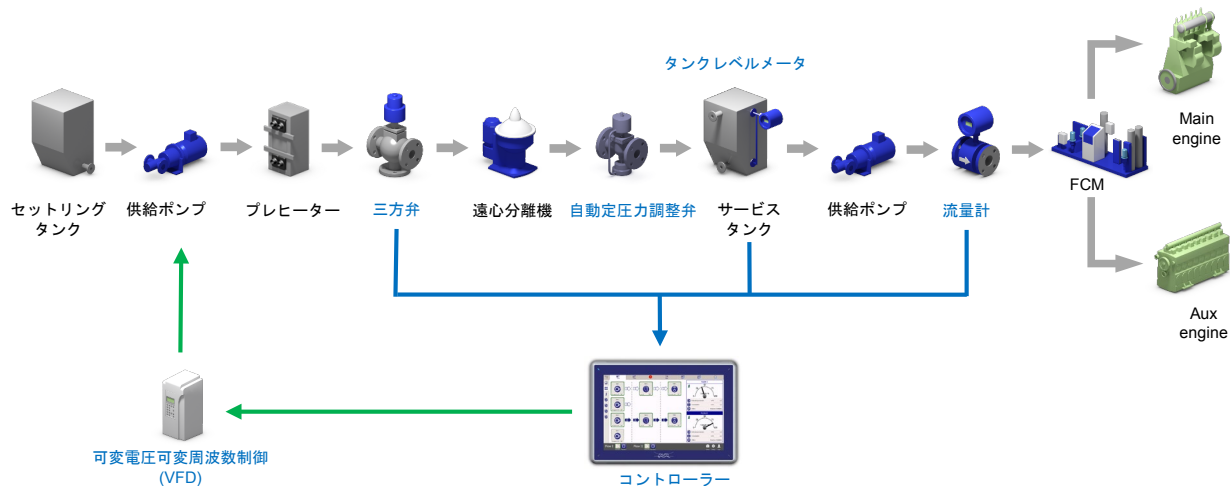
- 触媒粒子は主機に深刻な摩耗の誘因
- **226隻のシリンダライナ摩耗の原因をMANが調査**
 - 190ケース が触媒粒子と関係
 - 高濃度の触媒粒子は、数時間でシリンダライナを摩耗させることがある
 - 修理には高額な費用が発生！



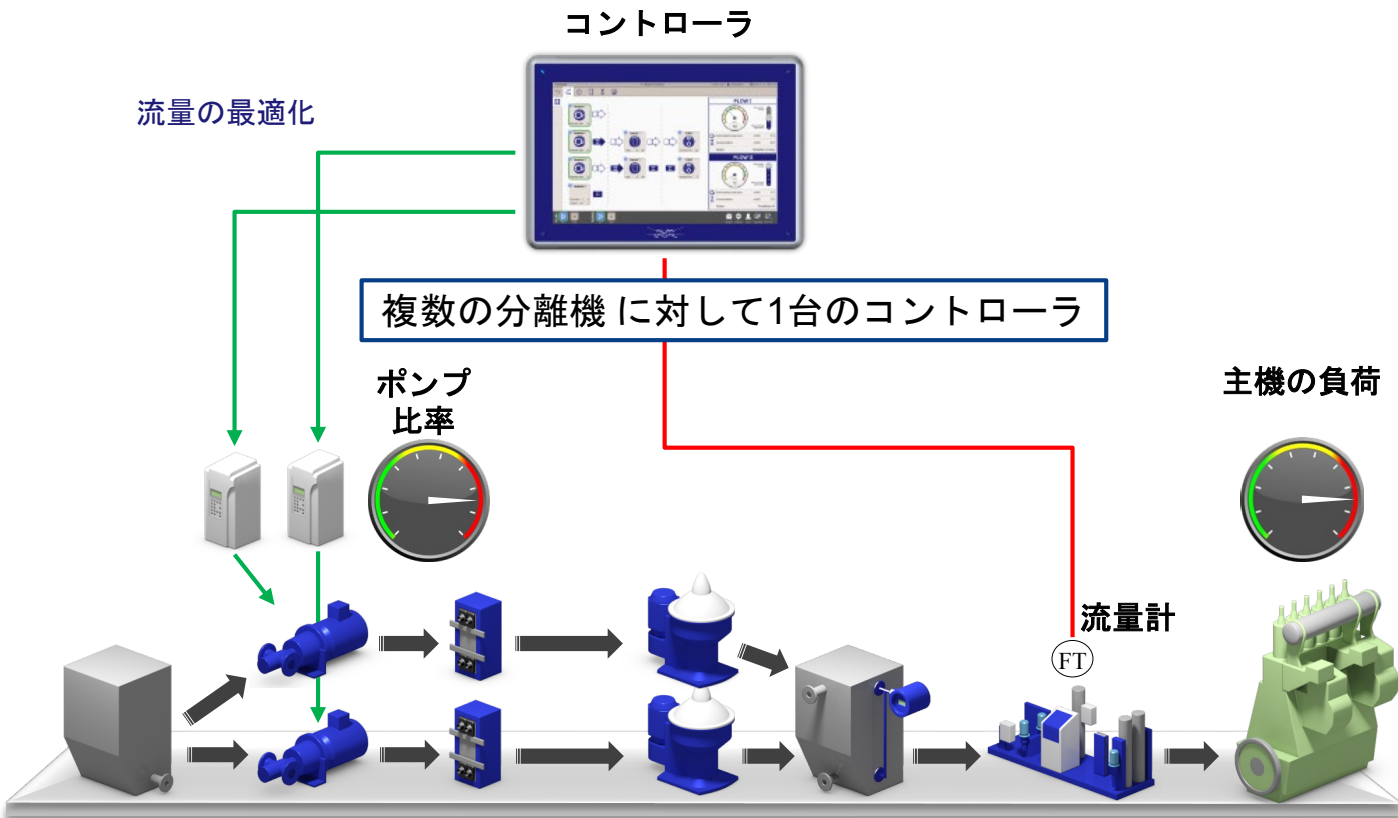
FlowSync 1.0



* 実際の消費量に合わせて流量を下げる



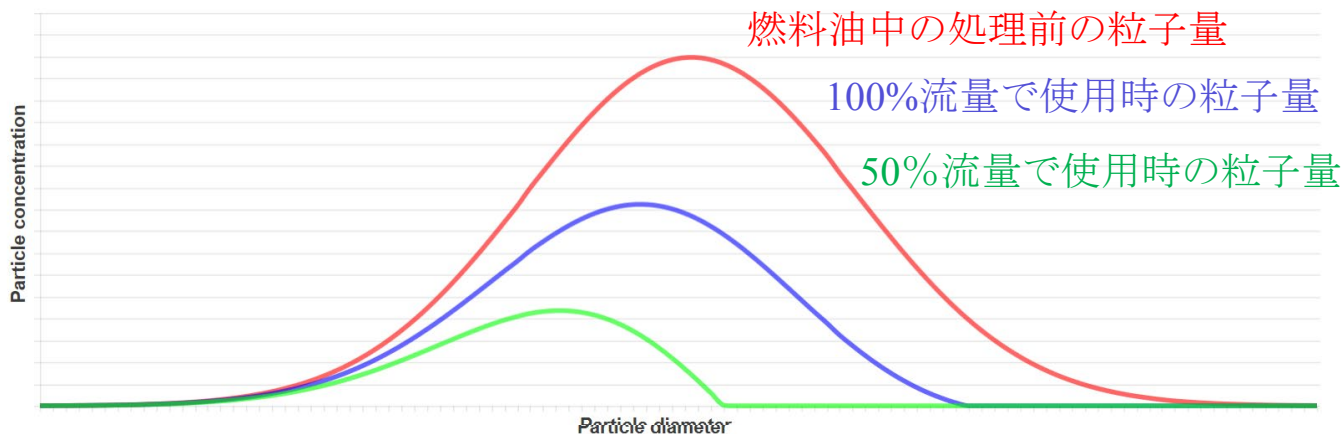
FlowSync 1.0 – 仕組み



分離効率



流量を減らすことで分離効率が上昇



Separator 9X8

ALCAP

Alfa(アルファ)

Laval (ラバル)

Clarifier(クラリファイヤ)

Purifier(ピュリファイヤ)



分離効率を向上するアップグレード



＊ S型分離機の分離盤のアップグレード

- より改良された新しいデザイン
- 既存S型分離機より高い処理量
- 認定流量(CFR) 承認付き



FCM One

Fuel conditioning system for diesel engines



The FCM One fuel conditioning system.

ACS Automated Changeover System



- * 軽質燃料油, ULSFO / VLSFO
- * 燃料の冷却が必要



モアッティ 10 μ アップグレード



* エンジンに入る前の最終の保護機能

Service Letter SL2017-638/DQA

MAN Diesel & Turbo



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Cat fines (Al + Si) content entering the engine.

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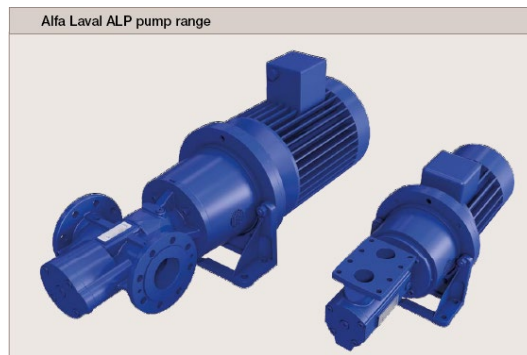
CIP and Pumps

CIP（無開放定置洗浄）と ポンプ

- * 分離機 / ヒーター
- * 作業削減
- * 部品の消耗削減
- * 分離効率の維持



- * サイズ 0015 to 0280
- * Delta p 6 or 10 bar. Max 16 bar







Alfa Laval Connected vessel

Alfa Laval ビュービルジ コネク



船外排出の自動レポートシステム



全排出期間中のPPMレベルと総排出量を表すグラフ



排水弁の開閉中のGPS位置情報と船舶の位置をプロットした地図GPS



レポートには、製造番号とリンクした排出日とタイムスタンプが表記されます。

バーチャルログ PPM

