

Pall Metal News Asia

SEASI Conference 2011

Pall presents at SEASI 2011

Pall will present at this year's 40th Anniversary SEASI (South East Asia Iron and Steel Institute) conference – Resorts World Sentosa, Singapore on the 23rd - 27th May 2011.

The topic, part of the afternoon Environmental Management session on the 24th May, will be 'Hot Gas Filters for Simultaneous Removal of Particulate Matter, NO_x and SO_x in the Steel Industry'. The paper will be showcased for the first time at this conference, presented by Pall's global market specialist on hot gas filtration, Manfred Salinger. Copies of the paper will be available after the event as well as from the Pall exhibition stand (Booth No C07).

In addition to Manfred who will be available to discuss hot gas applications throughout the week, members of the Pall Asia Primary Metals team will be on hand to discuss your specific fluid and gas cleanliness requirements. Stress resistant technology (SRT) hydraulic and lube oil filters, polymer candle technology and diagnostic equipment will be on display for review and discussion. We look forward to meeting you in Singapore!



Technology Solutions for the Steel Industry

Introduction

Welcome to Pall's first edition of the Metal News for the Primary Metals industry in Asia. Having been heavily involved in the steel industry for over twenty years, I'm very pleased to bring you our news for this important heavy industry where technology will continue to play a key role in the future.



In this edition we bring you some case studies of critical hydraulic system and degreasing bath applications. There is also an interesting article on "electrostatics" which affects many oil systems around the world. One of our very experienced team members from Korea is also profiled as he provides comprehensive support to major steelworks, and we feature our latest technology "SRT high performance filtration" for heavy industry. I hope that you enjoy reading our new Pall Metal News Asia. For more information on any of the articles please contact me at robert_hilliam@ap.pall.com.

CASE STUDY

Advanced Filter Technology Protects Critical Rolling Mill Hydraulic Power Packs

To respond to the increasing demand of the market worldwide, steel makers have either already extended their production capacities or started to upgrade their rolling mills to meet customer requirements for increased production volume and higher quality. Reliability has become a critical factor in keeping production output high.

Problem

Protect the new critical hydraulic components (mainly servo-valves and proportional regulating valves), from the effects of contamination by:

- Maintaining fluid cleanliness at ISO 4406 Code <15/13/10
- Keeping maintenance costs low with a filter element service life of at least 12 months

System Operating Parameters:
Fluid: Mineral Oil ISO 46 or 68
Operating temperature: 60 °C (140 °F)

Solution

Fit 5 and 12 micrometre rated high performance [$\beta_{x(0)}$ > 1000] Ultipleat® SRT filters in filling, and return line locations



Ultipleat SRT UR319 and UR619 series filters were fitted to the filling and return lines

Results

- Stabilized system cleanliness level at ISO 4406 14/12/09 cleanliness level
- In excess of 12 months filter element service life
- Reduced maintenance costs on the new hydraulic power packs

Electrostatic Charge Generation in Hydraulic and Lubrication Systems

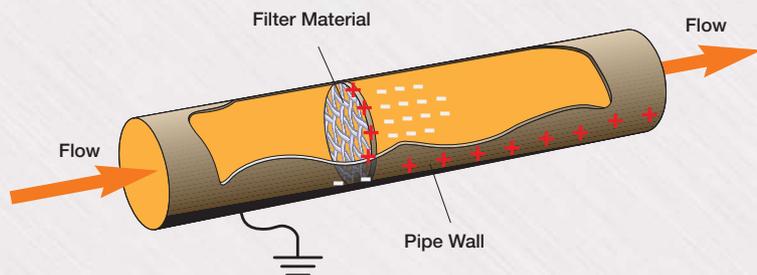
Electrostatic charge generation occurs today in various fluid systems around the world. This occurrence can lead to expensive critical component damage, shortened fluid service life and expensive plant down time. Electrostatic discharge is a result of friction between the fluid and system components. Charges can occur during filtration of hydraulic and lubricating fluids. This effect manifests itself in several ways, the most obvious being an audible noise (clicking sound) as discharge of electrostatic charge accumulation causes sparking internally within the system.



Electrical discharge occurring inside oil tank

The causes of electrostatic charging include:

- Friction caused by fluid flowing in pipes
- High fluid velocities
- Fluids flowing in ungrounded pipes and hoses
- Passage of fluids through filter elements or other microporous structures
- Generated by pumping elements, especially centrifugal pumps



Electrostatic charge generation during fluid filtration

The detrimental effects of triboelectric charging (TEC) include:

- Arcing and physical damage to fluid system components (heat exchangers, flowmeters, valves, filter housings and filter elements)
- Reduced contamination control (contamination in fluid system – detrimental effects of contamination and contamination induced component wear)
- Fluid break down (thermal degradation/varnish formation, premature additive depletion, reduced fluid service life)
- Safety – electrical arcing can pose a safety hazard

If the filter is made of nonconductive synthetic material, it will acquire a charge which will not be able to dissipate or relax into the filtration system due to the high resistivity of the material. The filter will act as a capacitor and charge until the voltage is great enough to overcome the gap and discharge to a lower potential. If the filter is charged with a high enough voltage, it can discharge to the metal parts of the filter assembly housing, causing surface damage to the housing, burn marks and other damage to the filter element.

Overcoming Triboelectric Charge Generation - A Novel Filter Media

Various attempts have been made to alleviate the potential of static charge accumulation in filtration systems, including:

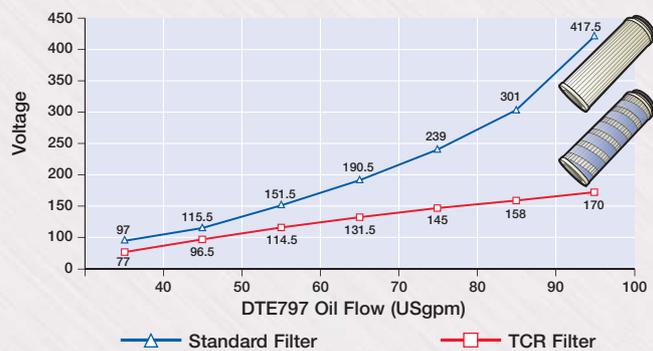
- Use an antistatic additive
- Use a grounded system to prevent the sparking of the system to nearby conductors. However, grounding the system will not prevent the charging of the filter material or fluid, nor will it accelerate the process of discharge
- Reduce the charge exiting the filter by adding a conductive mesh downstream of the filter material. Note that not all of the fluid's charge is discharged because the mesh opening cannot be too small or it will restrict the flow
- Reduce the flow density in the filter material by increasing the filter size. However, this is not practical in all cases

The approach taken by Pall Corporation involves designing the filter material to generate and accumulate significantly less charge by using antistatic element technology.

Triboelectric Charging Resistant (TCR) Filters

Filter elements are designed to distribute the charge over the filter element (so that the local electric potential does not build up to the point of electrostatic discharge). Note that grounded metal support meshes do not prevent:

- Triboelectric charging, they only minimize electrostatic discharge/arcing
- Fluid degradation and varnish formation



Comparative testing of standard versus TCR Filters

The antistatic filter media in Ultipleat® SRT filters was developed to eliminate potential electrostatic charge problems in filtration of hydrocarbon fluids by preventing or significantly reducing charge generation and its accumulation. With Ultipleat SRT filters, even low conductivity fluid causes no material damage, and the charge measured in the downstream fluid is lower than the charge generated through filtration with standard glass fiber (GF) materials. This can have a significant influence on minimizing fluid degradation and varnish formation, reducing physical damage on system components and maintaining consistent level of contamination control.

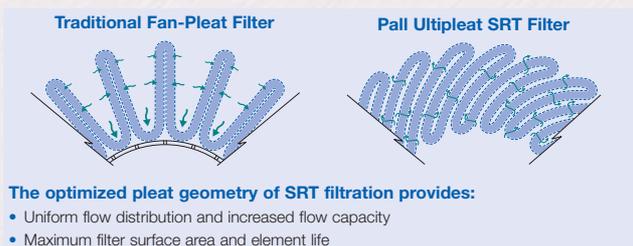
For more information on Ultipleat SRT filters visit www.pall.com/ultipleat.
Reference: LEONARD BENSCH AND MIKE DAY, PALL CORPORATION, "Electrostatic Charge Generation - In Hydraulic and Lubrication Systems". Practising Oil Analysis Magazine. November 2005

The Ultimate in Filter Design

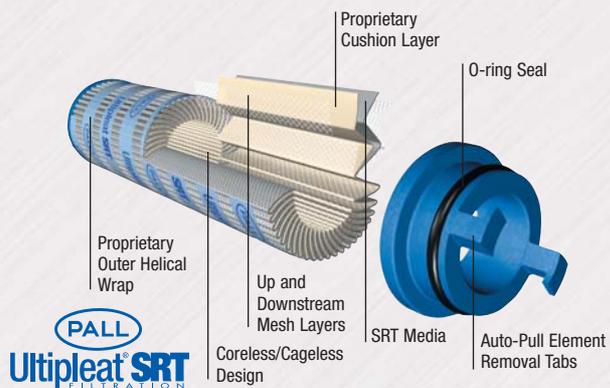
Steel producers globally have realized and are enjoying the benefits of the proprietary wave shaped filter media used in Pall's Ultipleat® SRT high performance, long service life filters.

Ultipleat SRT (Stress Resistant Technology) filters combine an innovative element design and high-performance filtration media to improve fluid cleanliness and reliability of hydraulic systems in industrial equipment. The revolutionary wave shaped filter pleat geometry allows more filter area to be packed into the filter element to provide a smaller more economical package.

Ultipleat SRT filtration media resists operating system stresses such as variable flow and pressure to provide better fluid cleanliness over the service life of the filter element, thus contributing to high reliability of hydraulic and critical equipment.



Ultipleat SRT filters also incorporate anti-static materials of construction to reduce electrostatic charge that can be generated by the flow of hydraulic and lubricating fluids through filter elements. By eliminating static discharges, antistatic construction prevents associated damage that may occur to the filter element, housing, fluid or critical system components.



A series of new housing designs cover a wide range of flows and pressures, available in cast aluminium or cast iron, with a selection of mechanical and electrical indicators to suit your application.



Filter element change is made quick and simple by the revolutionary Pall Autopull element removal system. The coreless element construction ensures used element disposal is both easy and economic. For further information on the Pall Ultipleat SRT range of filters, contact Pall or visit www.pall.com/hydraulic.asp for more details.

CASE STUDY

Degreasing Bath Regeneration System for Coil Coating Lines

To protect the coils from corrosion, protective coating oils are normally sprayed on the metal sheet surface. For a proper adhesion of galvanizing or painting, oils and contaminants must be removed from the surface of the metal prior to any coating. This important step is done in an alkaline degreasing bath (pH = 13-14 and temperature up to 90 °C).



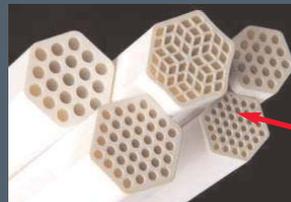
Pall Membralox® System

Problem

If oil levels in the degreasing bath rise above a recommended limit, the quality of the degreasing is less effective and this may cause major problems with the next coating stage. To maintain the coating efficiency, the bath must be frequently changed resulting in high levels of: equipment downtime, high operating and labor costs, waste disposal, energy consumption, and additive replenishment.

Solution

Continuous regeneration of the degreasing bath with an ultrafiltration system using Pall Membralox cross-flow ceramic membranes. Currently there are more than 10 successful references in Primary Metal industries worldwide.



Membralox® Membranes



Membralox® Module

Results

Very short return on investment (< 2 years) with cost reduction achieved on :

- Chemicals additions (surfactant, anti-foam, sodium hydroxide,...)
- Water make-up
- Energy consumption (heating up to 70-80 °C)
- Wastewater treatment



Without Pall Membralox® System

With Pall Membralox® System

Improvements were also achieved in:

- Higher and constant cleaning quality
- Better environmental issues
 - Reduction of discharged volumes
 - Reduction of pollutants (COD, Hydrocarbons,..)



Introducing Tae Yoang Hong

Tae Yoang Hong joined Pall Korea in October 1997, having previously been employed as Superintendent of #1 Hot Rolling Mill at Hyundai Steel (Ex. Hanbo Steel). Today his specific support to steel producers focuses on the filtration of by-product gases applications such as COG, mixed gas and FINEX gas including water, tar and other contaminants.



“Our customers are particularly interested in environment issues with many considering new recycling and eco-friendly processes in-line with their CO₂ Emission Policies. This is particularly the case in the next-generation of iron making plants which eliminate the preliminary processing of raw materials and offers a significant reduction in production greenhouse gas emissions. Several FINEX plants will be built in Korea (3 plants at present), China and other developing countries within the next two to three years which will benefit from Pall's advanced fluid recycling and dry gas de-dusting systems to achieve the highest environmental performance in the industry today.

As carbon reduction policies gather pace in the Asian steel mill industry, many existing plants are expected to invest in process and equipment upgrades to meet new environment regulations. Key to the success of these upgrades will be new gas filtering and waste water recycling systems. In addition, the demand for increased equipment reliability combines improved fluid cleanliness and accurate real-time condition monitoring to predict and prevent potential equipment failure.

In each of these cases, Pall brings proven filtration technology solutions and vast application experience to support the steel industry and meet the environmental and production challenges faced by steel producers today. We support our customers with technical advisory resources and hold regular technical workshops for discussing application challenges and sharing success stories. I look forward to discussing your success stories too!”

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For more than 60 years, Pall Corporation has been solving complex filtration, separation, purification, and contamination control problems. In the metals industry, Pall has developed separation solutions that reduce contamination and improve performance, increasing customers' profitability by optimizing the performance and reliability of plant equipment and enhancing manufacturing processes.

Metal Producers and OEMs Trust Pall as Their Solution Provider

Solid, liquid, and dissolved contaminants present in hydraulic, lube, and aqueous solutions can cause operating problems and increased maintenance in hydraulic, lubricant, coolant, and other fluid systems that are a part of primary metals processing. Such issues can be resolved by the use of highly effective, reliable, and correctly applied filtration and separation technologies, implemented as a program of Total Cleanliness Management (TCM), the integration of products and services that optimize productivity, reliability, quality, safety, and environmental protection.

Products

- Hydraulic and Lube Oil filters
- Oil Purifiers Diagnostic and Monitoring Equipment
- Water Treatment Systems
- Process Fluid Filters
- Energy and Emission Management

Services

- Scientific and Laboratory Services (SLS)
- Fluid Analysis Services
- Equipment Surveys & Consultation
- Contamination Control Seminars
- Process Assessment
- Commissioning and Flushing



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Printed in the UK.

May 2011

