Lubrication systems in Pulp & Paper industry
Our technicians and engineers, study the lubrication processes in the customer facilities, the machinery operation and the work conditions by collecting the following information:

- Machinery, equipment and list of components.
- Points to localize and identify. Critical points.
- Ideal lubrication system.
- Environmental conditions, productive process, work conditions of the equipment and elements.
- Requirements of the Quality Normative (ISO), risk prevention and environmental protection.

After getting this information, it is analyzed and through the Engineering and Technical Office departments, a centralized lubrication project is developed according the customer needs. The production area of Grupo Técnico RIVI starts the manufacturing of the equipment to install, only after the approval of the contract company.

According to the delivery times required by the customer, the Assembly Team completes the assembly, commissioning and start-up of the centralized lubrication system.
Lubrication systems in Pulp & Paper industry


For the Pulp & Paper sector, all the machines must operate continuously even under the most rigorous work conditions (misty & wet areas, extremely high temperatures, chemical agents...). Here is where RIVI’s equipment, systems and products, highlights for their quality and reliability, and it comes to represent an standard in production centers, as well as for OEMs of machinery for paper mills, cardboard, cellulose pulp, and others.

Grupo Técnico RIVI offers long lasting experience, quality and service, for any automatic lubrication project, giving a tangible and immediate productivity increase, cost reduction in maintenance, and reduction in energy consumption of the machinery.
Lubrication systems in Pulp & Paper industry

Centralized & Automatic Lubrication

A lack of lubricant might cause undesired breakdowns in the machines. The high cost of the mandatory maintenance and lubrication tasks, join to a big value of the machines, lead to the need of install centralized and automatic lubrication systems.

The accumulation of hostile agents like dirt, contamination, moisture as well as the high mechanic loads, are the reason of excessive wearing of the friction points. So, the lubrication is absolutely necessary to provide the right protection. RIVI lubrication systems are a reliable way to ensure a right lubrication. While the machine operates, the right volume of lubricant is distributed to every lube points connected to the automatic system, on the right time.

The lubrication ensures that the lubricant will be distributed optimally and evenly to every friction points, and it will avoid friction and premature wearing.

Big Cost Reduction = Fast ROI
(return of investment)

Installing a lubrication system reduces the cost of repairing and maintenance drastically. It also reduces the lubricant consumption and it extends the useful life of the machinery.
Lubrication systems in Pulp & Paper industry

Centralized & Automatic Lubrication

Grupo Técnico RIVI offers the most appropriate lubrication solutions for every pulp & paper production process. In fact, by giving a right lubrication, breakdowns and failures attributable to an inefficient greasing, are immediately reduced; moreover, an optimal performance of the machine is ensured.

More of the 50% of the failures in bearings come from inadequate lubrication. In 97% of them are manually lubricated.

Advantages

**Productivity:**
- Increase of availability of the machine
- Increase of production
- Improve of the ratio cost/production
- Increase in the competitiveness of the company

**Energy efficiency:**
- Less wearing
- Decrease of energy consumption due to friction is minimized
- Reduction of CO2 emissions

**Security and occupational health:**
- Elimination of risks for access to dangerous areas for manual lubrication
- Less contamination and lubricant residues, and less risks of sliding lesions.

**Environmental protection:**
- Less acoustic contamination
- Reduction of residues (for use more efficient of the lubricants)
- Reduction of costs for manipulation and waste container of lubricants.

**Maintenance:**
- Decrease of number of no programming stops
- Improve on effectiveness
- Cost reduction for repairing
- Cost reduction for automatized activities
- Eliminate cost in tools of manual lubrication
- Extend the intervals for maintenance
Lubrication systems in Pulp & Paper industry

Centralized & Automatic Lubrication

The professional team who compounds Grupo Técnico RIVI, work to provide you the technique solutions and the services which best optimize the lubrication of your paper mill, avoiding problems and ensuring the best continuous lubrication.

Few of our products have been specifically developed to be used in pulp and paper industry, in order to work continuously under the worst environmental and operation conditions.

It is possible to undertake centralized lubrication projects step-by-step, by gathering individual points or lubrication areas, centralizing them later on, and finally completing the automating process with different levels of monitoring and control.

1. Isolating lubrication points. Manual lubrication point to point
2. Lead/distribution. Manual lubrication gathering. It is reduced the number of points.
3. Centralization through lubrication equipment. First phase of the centralized system.
4. Integrated control. Centralize and automatic system.
5. Automation and control system from PLC/DCS in plant.
Lubrication systems in Pulp & Paper industry

Process diagram:
Lubrication systems in Pulp & Paper industry

Technical systems: Single Line

RIVI’s single line systems are used when the lubrication needing's are different among diverse lube points of machinery. The lube injectors – direct action – has a metal to metal adjustment, and pistons capable of deliver lubricants even at high pressures. Each injector is individually driven, and supply to only one lubrication point. It can be adjusted with high precision to supply the exact quantity of lubricant required. Whenever the pumpstation be powerful enough, and piping size be appropriate, the entire lube system can be expanded at anytime.

• Individual lubricant injection for each lubrication point.
• Visual and electric (optional) monitoring.
• Lubricant supply in high pressures.
• Simplicity – easy to understand and install.
• Extendable.
• Stainless steel injectors available.
Lubrication systems in Pulp & Paper industry

Technical systems: Single Line

Single line injectors installed on Reel Up

Products Portfolio

Single line system for Dry-end Pulper
Lubrication systems in Pulp & Paper industry

Technical systems: Multiline

This system uses pumpstations of multiple outlets, radial pumps that have been successfully used since the earliest industrialization. With these pumps the lubrication – either with oil or grease – takes place by means of individual outlets from a central station in a metered way. Each outlet houses a pumping element in radial position which is driven by an eccentric, and supplies an adjustable volume of lubricant.

Features:

• All the points are connected directly with tubes to different outlets of the pumpstation, without distributors.

• The dosage to each single point is regulated in the pumpstation itself, by means of pumping elements.

• By means of progressive metering devices the possibility of points to lubricate is extended. The system continue working while the pump is switched on. When the pumpstation turns off, the progressive metering device stops, and it will continue from the same point when the system starts again.
Technical systems: Multiline

Multiline systems installed for automatic lubrication of coating calender, winder, presses...
Lubrication systems in Pulp & Paper industry

Technical systems: Progressive

The progressive RIVI’s systems have been designed to satisfy the most restrictive lubrication requirements of machines and equipment. Its reliability is based on the principle of progressive function, where the lubricant is delivered to the lubrication points by pressure-driven pistons. The lubrication occurs in intervals regulated a maximum pressure of 350 bar. So that, the lubrication of the lube points is also feasible even against high backpressures.

Benefits of Quicklub system:
• There is not corrosion of the pump housing, make in fiber reinforced resin, especial for hard activities.
• Pump engine is protected for wear and wet.
• Few sizes of reservoir available.
• Safety valve, also equipped with visual indication and return line to reservoir.
• Integrated Control Plate (optional) and Touch Display and Data Logger to collect lube information.
• Monoblock design of Lincoln progressive Metering Devices prevents from leakages, and allow operation up to differential pressure of 100 bar (inlet vs outlet).
Technical systems: Progressive

Progressive systems can be used either for grease – sheet cutter, conveyors.. – or even for oil (dryers), up to 0.5 lts/min (higher flow on request).
Lubrication systems in Pulp & Paper industry

Technical systems: Double Line

- DLS/C: Conventional double line system
- DLS/S: Smart double line system

In heavy duty conditions like extreme temperatures (very cold or very high), dirty or moisture environment, RIVI double line systems provides the most efficient way to lubricate friction points. Just one centralized equipment is able to supply lubricant to a huge number of lube points in the right way. RIVI double line systems can be also extended at anytime.

Features:

- Perfect for disperse lubrication points.
- A maximum pressure of 400 bar avoid the use of tubes with a diameter more small.
- Visual or electric monitoring for each couple of outsides (optional).
- Simple and individual dosage – each couple of outsides can be adapt individually.
- Stainless steel version (AISI 316Ti) available
Lubrication systems in Pulp & Paper industry

Technical systems: Double Line

Dual Line installations in different paper machines (calender, wet area, presses...)
Lubrication systems in Pulp & Paper industry

**Technical systems: Double Line SMART (DLS/S)**

The SMART Control Cabinet (SCC) records the differential pressure value between both main lines. This way the operation pressure of each line only have to reach the relief pressure of the other main line plus the minimum operation pressure of the metering devices. This value is not constant, and therefore the automatic lubrication system works only at required values.

Smart Double Line systems designed by RIVI are self-adjustable and allows different greases without changes. Monitoring is more efficient. Lubricants does not suffer bleeding. Fittings and connections works at the minimum pressure levels required.
Lubrication systems in Pulp & Paper industry

Technical systems: Double Line SMART (DLS/S)

* Which components are different to classical Double Line Systems?
  1. End-of-Line switch is differential-type 4-20 mA
  2. The Smart Control Cabinet includes a new software
  3. The Change-over valve has to be electrical or pneumatical driven

* Are the rest of components valid?
  Yes, of course. Metering devices, pipes, interconnection fittings and even Pumpstation are usually compatible with the DLS/S.

* Can be a classical DLS be transformed into a new DLS/S?
  Yes, of course. Only three elements above stated must be replaced. Just contact G.T.RIVI for further assistance.
Lubrication systems in Pulp & Paper industry

Technical systems: Spraying

By means of any centralized lubrication system (simple line, double line, multiline, etc.) either oil or grease is metered by nozzles that, throughout the inlet of compressed air, sprays the lubricant to the surfaces.

Depending on the products (pumps and nozzles) used, the operation and control of the installation takes place in different ways.

Spraying is mainly used to lubricate heavy open gears, where an insufficient or inadequate lubrication is unacceptable, due to consequences that it might cause.

So, it is essential to study and to define the system components, in order to avoid failures or breakdowns during the useful life of the machine.
Lubrication systems in Pulp & Paper industry

**Technical systems: Oil Circulation**

This system is considered as an excellent solution for multiple applications. It mainly used to cool bearings down and to avoid pollution inside the bearings. The lubricants used are oils.

A pump suction oil from the tank and pump it through the filters, heat exchangers, etc... until it is continuously and evenly supplied to the different lubrication points. Later on oil returns to the tank by effect of gravity, where it is recirculated again.

**Features:**

- Tanks, containers & reservoirs, up to 50,000 liters, with surface protection, RAL on request, indirect heating, visual and electric level monitoring, temperature & pressure control, etc...
- Screw & gear pumps, up to 2000 lt/min with safety valve
- Motor types on request
- Simple or change-over filters, clogging indication, etc...
- Adjustable valves, for temperature, flow and pressure
- Piping & Instrumentation.
Lubrication systems in Pulp & Paper industry

Technical systems: Oil Circulation

Oil Circulation Stations must be carefully designed according to the lubrication requirements of the paper machine. Every component must be selected based not only on specifications but also on experience.
Technical systems: Oil Circulation

OCS for Paper Machine (300 lts/min, ISO VG 220)

Isolated and heated tank

3D-modelling

Twin systems

Grupo Técnico RIVI (Zaragoza, Spain) – Tel. +34 976 126585 / Fax: +34 976 126579 / Email: comercial@rivi.net / Websites: www.rivi.es – www.rivi.net
Technical systems: Oil Circulation

Every installation of OCS systems in paper mills requires a huge responsibility level, due to this task must be achieved on time, with very restrictive deadlines.

Quality and efficiency of welders & fitters are essential, as well as experienced team leaders, in order to finish the assembly, installation, flushing, commissioning, and start-up within the timeline expected.
The quality policy of Grupo Técnico RIVI promotes constant improvement and continued in the design, fabrication and old of equipment and installations. The certifications and homologations ISO, ASME, APII... as well as the security and environmental normative pertinent, making part of our company philosophy.

Guarantee of functionality, effectiveness, durability and reliability of installations under adverse conditions.

Strict compromise of fulfillment of delivery dates, ensure the start-up of production before deadlines requested.

After every project, is delivered complete documentation and personal training, for the correct operation, adjustment and maintenance of the installed automatic lubrication systems.

- General Arrangement (GA)
- Process & Instrument Diagram (P&Id)
- Quality dossier (Tests, calibration certificates, material certificates...)
- Technical data sheets & Bill of Material (B.O.M)
- Start-up & Maintenance User Manual
- Spare parts & Operation instructions

- Sectional & specific drawings
- Logic diagrams
- Calculation of components
- Special certificates
  - NDT (Not Destructive Test)
  - PMI (Destructive test) positive ID raw materials
- Welding procedures
Lubrication systems in Pulp & Paper industry

RIVI’s scope of supply in Pulp & Paper industry:

- Technical Assistance
- Calculation & Design
- Proposals & Alternatives
- Integration
- Manufacturing
- Delivery
- Assembly & Installation
- Commissioning & Start-up
- Documentation
- Guarantee
- Maintenance
- Training
- Asistencias Técnicas
- Cálculo & Diseño
- Propuestas & Alternativas
- Integración
- Fabricación
- Suministro
- Ensamblaje & Instalación
- Supervisión & P.E.M
- Documentación
- Garantía
- Mantenimiento
- Formación
Lubrication systems in Pulp & Paper industry

Under the hardest operation conditions is where RIVI’s lubrication systems stands out for reliability, effectiveness, accuracy and durability. Each single system has been design specifically to satisfy the requirements of each application. Our customers are our best guarantee.