Our technicians and specialists, not only study the lubrication processes in the customer installations, but also the machinery itself as well as the operation conditions, by means of following data collection:

- List of machines, equipment and elements.
- Points to localize and identify. Critical points.
- Ideal lubrication system.
- Environmental conditions, productive process, work conditions of the equipment and element.
- Requirements of the Normal Quality (ISO), risk prevention and environmental protection.

After getting the information, it is analyzed by Engineering and Technical Office departments, and a customized lubrication project is developed. Manufacturing area of G. T. RIVI starts the production of the equipment to install as soon as receiving the approval from the customer.

The assembly department, composed by highly-skilled fitters, welders and technicians, perform the installation and commissioning of the centralized lubrication system.

For the food industrial market, where the machinery must keep on motion even under the most rigorous operation conditions, RIVI systems represent the Standard in lube equipment: automatic systems, control cabinets, pumpstations, mobile systems... the sugar production sites take RIVI into account due to qualified and reliable products, as well as service and experience.

With RIVI systems and solutions, the sugar industry increases their productivity and achieves an important cost reduction.
Lubrication systems in Sugar Production Plants

The lack of lubricant can produce a no programming stop in the machines. The high cost of the obligatory maintenance and lubrication, with a big value off the machines, conduce to the need of install centralized lubrication systems and automatized.

The accumulation of hostile ways like dirt, contaminating, water and the mechanic loads is the reason of a high wear of the treads and friction points. So, the lubrication is absolutely necessary for supply the right protection. The lubrication Lincoln systems are a reliability way to regulate the lubrication. While the machine operates, the lubricant is distributed to whole the connecting points in the system, automatized and with quantities and times adequate.

The lubrication ensure that the lubricant will be distributed optimally and equitably for whole the treads, decreasing the friction and premature wear.

Big Reduction Cost = Fast Amortization

Install a lubrication system reduce the cost of repairing and maintain drastically. Also the lubricant consume is reduced and increase the useful life of the used pieces.
Main advantages of automatic lubrication:

- Increasing of productivity
- Savings expenses for maintenance, spares and lubricants
- Operative life is extended; undesired breakdowns are avoided
- Issues related to inadequate lubrication are eliminated
- Important benefits for EHS

Grupo Técnicas RIVI designs the automatic lubrication systems best fits to your needs. It is achieved by detecting the issues related with inadequate lubrication. RIVI also offers you the possibility to outsource the maintenance of lubrication area, as well as provides reports and just-in-time information of the status of your automatic lubrication systems.

The professional team of G. T. RIVI work to provide the technical solutions and services which shall optimize the lubrication of your machinery, so you will be able to focus in your production processes and other tasks more profitable.
Lubrication systems in Sugar Production Plants

- process diagram in Sugar production plant -

Sistemas Técnicos
1.- Only one line (grease)
2.- Double line (grease)
3.- Circulation (oil)
4.- Progressive (grease)
5.- Mechanical Lubricator (oil)

"Does not exist two identical installations: according to the machinery, localization, technical caracterization and environmental, even depending of the qualification and human maintain resources in plant, each lubrication project must be an independent design, and choose the technical system more appropriate.

J. Pueyo - G. T. RIVI
(Installations Chief Supervisor)
Sugar Production process

The cut is manual or mechanical, using quality parameters that decrease the material strange percentage.

After harvesting the cane (in case of manual process, it is mechanically harvested from the planting), it is transported to the industry on tractors and trucks as soon as possible.

Patios and Chopped of the Cane

The cane is unload in transporter tables, and go to the defibrillators that convert it in small pieces, easing the juice extraction by the mills. Here the grinding phase begins, by means of rolling mills which extract the cane juice.
There are numerous chains with lubrication needs in this operations.

The best way to perform the lubrication activity is by means of automatic systems + spraying nozzles.
Grinding and clarification

In this phase hot water is added to obtain the maximum quantity of saccharose in a process called Maceration.

The first hot phase ease the separation of insoluble solids and separates from the clear juice that is on the top of the clarifier, which are transported to the vacuum rotate filters for the recuperation of its saccharose contents.

Juice obtained goes to the next step.
Gears have an important function. They work under very adverse conditions and the maintenance actions must be reduced during operation. The gears require a lot of lubricant, and continually. Right lubrication reduces the lubricant consumption and the maintenance of the whole machinery.

RIVI spraying systems are the solution most appropriate for lubrication of open gears.
Evaporation

The cleared juice is forwarded to the evaporation tandem for centering until obtaining the Meladura which is purified in the clarifiers before being transported to the Cans.

Crystallization

In the Cans (Vacuum recipient of only one effect) is produced the brew mass compound for sugar and honey crystals. The crystallization work is done using the three brew systems to reach the maximum saccharose concentration.
Centrifugation, drying and cooling

The brew mass is centrifuged at high speed so it separates the crystals from the sugar mother liquor. During this process the sugar is washing in order to take the honey residues and posteriorly drying and cooling.

Package

After the sugar is dried and cold, it is packed in bags of different presentations, according the national and international customer needs.

Finally, the sugar is stocked in production lots, for commercialization according with the standards established in the certification ISO 9001:2000.

The sugar is a natural source of flavor for all class of products of bakeries, biscuits, chocolate, confectionery, juices, food, drinks and dairy.
1.- 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.

Features:
- Individual lubricant injection for each lubrication point.
- Visual and electric (optional) monitoring.
- Lubrication even at high pressure.
- Simplicity – easy to understand and install.
- Expandable.
- Injectors made of Stainless steel are available.
Lubrication systems in Sugar Production Plants

2.- 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 progressive systems:
• 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).
3.- Technical systems: Double Line

In heavy duty conditions, such as cold or heat extreme temperatures, dirt or wet environment, the double line Helios systems offer a reliable method to lubricate friction points. This centralized system is able to supply lubricant to a huge number of points efficiently. Double line systems allows even more flexibility in dosage of lubricant, by combination with progressive systems.

The double line RIVI’s systems are possible to be extended at anytime.

Features:
• Perfect for disperse lubrication points.
• A maximum pressure of 400 bar allows the use of tubes with a diameter smaller.
• Visual or electric monitoring for each couple of outsides (optional).
• Simple and individual dosage – each couple of outsides can be adapted individually.
3.1- Technical systems: Smart Double Line

This system, for its conception, is the most versatile, reliable and durable system ever. Based on the monitoring and control selection, RIVI’s Smart Double Line systems are self-adjusted in spite of temperature variations, change of grease, or any other external factors.

The difference between this system and traditional double line ones is that it works at the required pressure in every cycle. The smart double line system works automatically to the right pressure needed, thanks to the installation of the Smart Control Cabinet which monitor the differential pressure between the two general lines.

As consequence, the pump equipment will only generate the necessary pressure for each lube cycle, so the dosage is achieved without reaching a pre-set high pressure if it is not necessary.
4.- Technical systems: Oil circulation

This system is useful for multiple solutions. It is mainly installed – not only to lubricate – but also to cool down high speed bearings and to eliminate pollution and/or moisture. The lubricants used are oils.

A pump suction oil from tank and pass it through filters, heat exchangers, etc... until it is uniformly pumped out to the different lubrication points. Later on, by means of gravity it returns to the tank where it will be processed and pumped out again.

Applications: Hydrostatic and hydrodynamics lubrication for turbines, pumps, gears, reducers, fans...

Features:
• Tanks up to 50,000 liters, with surface treatment, RAL on request, indirect heating, visual & electric level, temperature control, etc...
• Screw pumps up to 2000 lts/min, with safety valve
• Engines on request, simple and change-over filters, clogging indication, etc...
• Pressure, temperature and flow instrumentation and valves.
5.- Technical systems: Mechanical lubricators

The lubricator is a robust and safe lubrication system, that supply to each point exact and tiny volumes of oil. It’s manufactured in 6 different sizes, from 1 to 18 outlets, on reservoirs from 1 to 6.5 liters. The number of outlets can be extended by connecting few lubricators and/or using progressive distributors.

The lubricant quantity supplied is individually adjustable, and pumped directly to the lube point. RIVI’s mechanical lubricators has few technical advantages like zipper sealing (without ball valve and springs) and an absolutely accuracy.

The different configuration possibilities make these products very easy to install in different sugar processes machines.
6.- Technical systems: Pressure equipment and accumulators

The pressure systems and accumulators for the Tandem, are key system in sugar industry. They have the important commitment of establishing and maintaining the adequate pressure in the cane mill, continuously, according to the operative conditions.

Each component that hydraulic equipment houses must guarantee the highest reliability. Due to the height of upper rollers must be adjusted as required on each moment, it is also necessary to adjust the hydraulic pressure in the mill bearings, synchronized for both sides. The sugar cane flow to the grinding process, comes determined from the first mill.
6.- Technical systems: Pressure equipment and accumulators

Components:

- **Hydraulic equipment:**
  - It includes oil tank, level switch, separator, filters, check and safety valves, high pressure pumps, instruments...

- **Accumulators:**
  - High quality and reliability. Maintenance is not required.

- **Level indicators:**
  - It allows monitoring the height of cylinders to the bearings

- **Control Panel:**
  - It gives permanent information about the status of the system. It also allows to adjust the operation pressure, the cylinder elevations and therefore the supply of sugar cane to the mill.
Supply systems: huge range of products.

RIVI’s supply systems offers to the users opportunities almost unlimited. Few control possibilities, sizes based on flow, and different driving types, allow to adequate the volume of lubricant as well as the pressure required for each application.

There are pneumatic, hydraulic, electric and manual equipment available for every kind of application; from booster tanks, to commercial drums (10, 20, 50, 200 kg), and from mobile applications to stationary installations.

The extreme temperatures do not stop RIVI pumpstations. Strict tests in artic and desert conditions have been successfully performance. The pumpstations operates with heavy greases (NLGI 2 and up under request).

Our outstanding FlowMaster (pneumatic pumpstation) services to small mobile machinery with low lubrication needs and also to huge machines and estacionary production lines with high lubrication needs.
Lubrication systems in Sugar Production Plants

Under the hardest operation conditions is where RIVI products highlight for their reliability, effectiveness and durability. Every system has been specifically designed to supply grease to the lubrication points in machinery of sugar processes. Our customers guarantee our quality.
Lubrication systems in Sugar Production Plants

- Manual lubrication pumps
- Centralized lubrication pumps
  - Pneumatic (membrane, cane...)
  - Electrical (12/24VDC – 230VAC)
  - Hydraulic
- Hose reels “heavy duty series”
- Grease and oil dosage
  - Simple line (Centromatic)
  - Double line (Helios)
  - Progressive (Quicklub)
- Electric control panels
- Monitoring systems
- Pneumatic elevators / hoist
- Filtration
- Dosage
- Interconnection accessories
- Flexible tubes
Double Line installations (examples):
Lubrication systems in Sugar Production Plants

Progressive installations (examples):
Example of single line installation (with pneumatic pump, from commercial drum 200 liters):
Oil circulation installation (example): Design and Engineering customized
Quality policies of Grupo Técnico RIVI promote permanent improvements in the design, manufacturing and installation of lube systems and equipment.

Certifications and homologations ISO, ASME, API... as well as the EHS normative and regulations are part of RIVI philosophy and structure.

Guarantee of operation, effectiveness, durability and reliability of installations under heavy duty conditions.

Settlement to fulfill the most strict delivery dates.

Warranty for start-up before the deadlines.

Complete documentation, training and support, after every project. This way the customer staff feels more comfortable during operation, adjustment if required and maintenance the lubrication systems installed.
Lubrication systems in Sugar Production Plants