



Lubrication Solution for **Sugarmill Applications**

 **TACBECON®**
SPECIALTY LUBRICANTS



Introduction

Today's sugar mill must deliver ever-increasing production capacities to meet the growing global demand for the sugar. Especially during the sugar cane harvest, these heavy equipment ranging from crushing and extracting the sugar cane often have to operate around the clock. Consequently, they cannot afford any machinery breakdown.

The equipment require lubricants that are able to sustain very high performance in extreme conditions of heat, water, steam, pressure, dust and dirt before shutting down for next maintenance schedule.

In response to these considerations, our engineers have carefully selected and recommended a range of premium lubricants in accordance to the specific requirements of critical equipment in sugar mill.

In providing our services, we look to build partnership with customers, with the aim of surpassing expectations. Through this commitment, our customer base has grown rapidly. Where specialty lubricants are needed, we can offer turnkey solutions to match your specific requirements.

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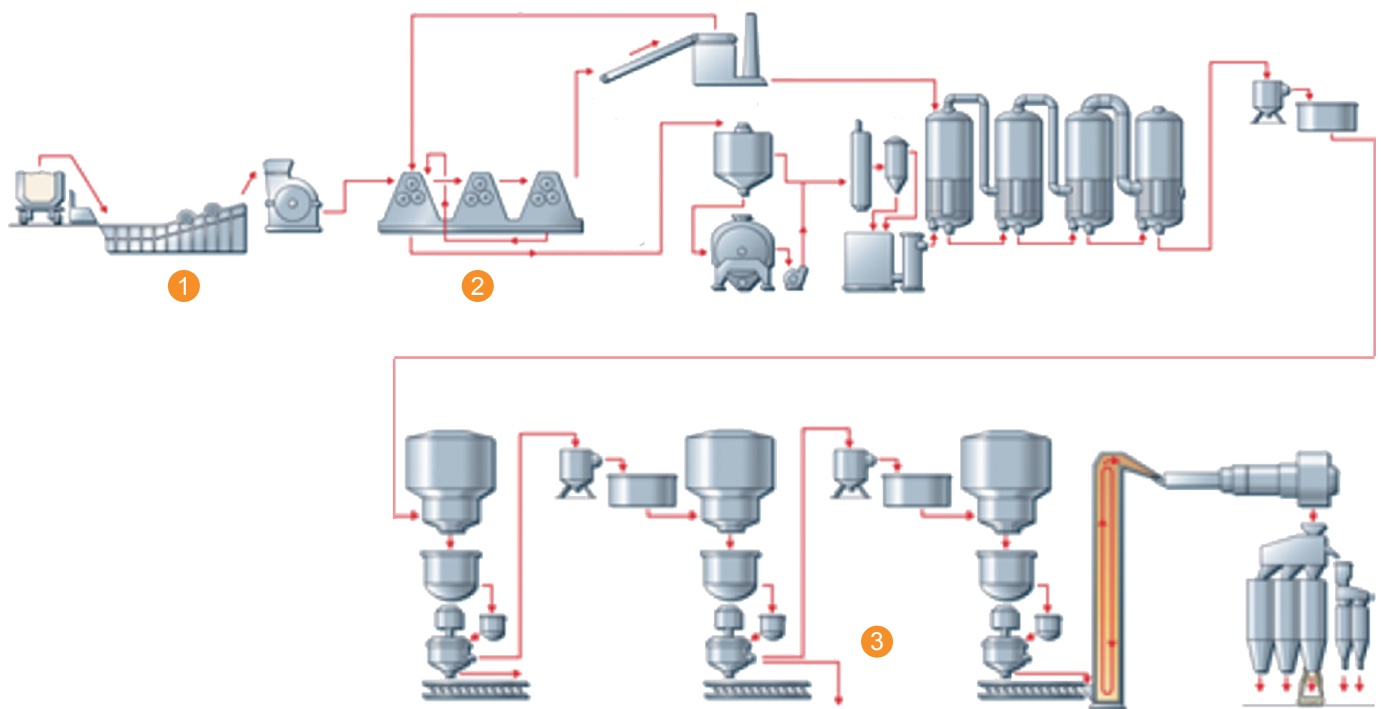
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Critical Equipment in Sugar Mill System

Each equipment plays the crucial roles in milling system and operates 24/7 for several months before shutting down for maintenance. Although these equipment are built to withstand these demanding operations, the machines may still encounter breakdown. One of many reasons is overloading of sugarcane that stress the equipment operating capabilities.

Application of specialty lubricant is essential as it protects the equipment from damages in any situation (i.e. heat, water, pressure, speed, etc.).

Sugarcane process flow



1 Cane Preparation

- Shredder shaft
- Bearings
- Conveyors - roller chains

2 Milling

- Steam turbine
- High-speed couplings
- Low-speed couplings
- Open gear
- Supporting bearings
- Tilt bar
- Crusher pinion gear
- Journal bearings

3 Crystallisation

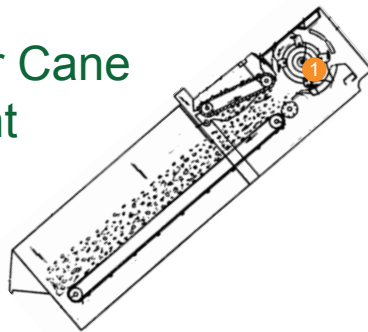
- Worm gear
- Shaft bearings

Cane Preparation

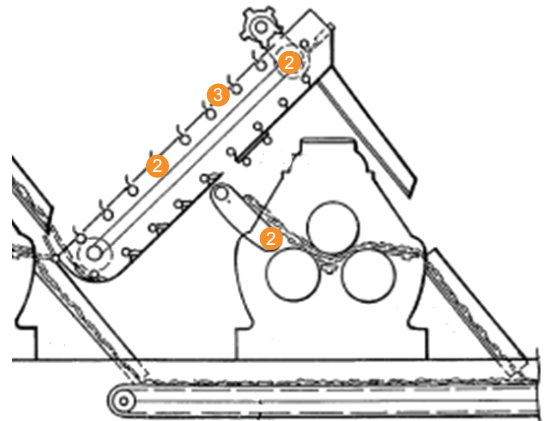
The conveyor system used to transport the cane into the mill for shredding and crushing need to be robust. When the chain link engages and disengages with drive to transmit motion in conveyor, it requires lubricants to minimise friction, wears and noise.

Bearings in the conveyor system often expose to water washout or moisture environment, need to be proper lubricated so as to prevent premature breakdown.

Lubricant Solutions for Cane Preparation Equipment



Shredding System



Conveyor System

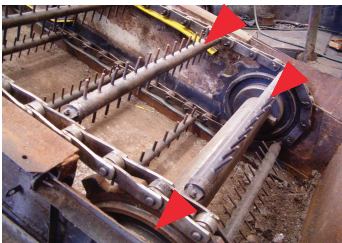
1 Shredder Shaft



The shaft of the sugar cane shredder requires lubricant to reduce friction in order to operate smoothly. Tacbecon SG 500 is formulated to perform under heavy load and has exceptional water resistance.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SG 500	Li/Ca	2	>190	-20 to 120

2 Bearings



The rotating bearings in the conveyor system transport the load of sugar cane up to crusher for juice extraction. Tacbecon Kopal EP 2 grease has an excellent water repelling property and loading capacity.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON Kopal EP 2	Li Complex	2	>250	-20 to 140

3 Conveyors - Roller Chains



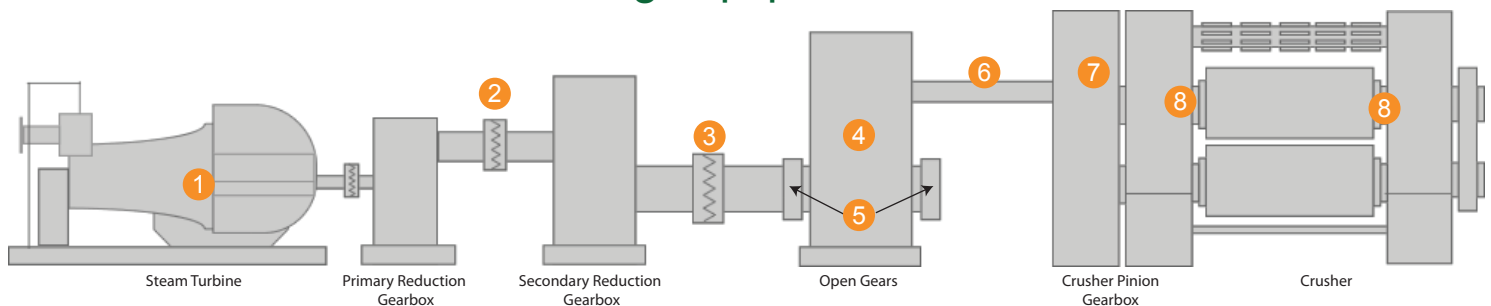
Tacbecon WR 150 chain oil has an excellent adherent property. The lubricant leaves an oil film layer which protects the metal surface against water washout and corrosion.

Lubricants	Viscosity ISO VG	Flash Point Point (°C)	Operating Temp (°C)
TACBECON WR 150	150	>250	-10 to 150

Milling

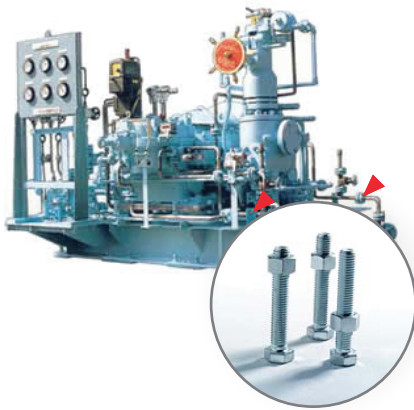
The movement of sugarcane is heavy, dusty and wet. When these conditions are imposed on large bearings, open gears, tilt bars, and chains, they demand lubricant of high specification. Especially in milling section, specialty lubricants are used under very high load.

Lubricant Solutions for Milling Equipment



Crusher System - Front View

1 Steam Turbine



Where there is a presence of heat and water, the metal surface (e.g. flanges or bolts and nuts) tend to weld together causing difficulty in dismantling. Tacbecon SYN M-PG provides film coating on the metal surface as the barrier against seizure and corrosion.

Lubricants	Colour	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SYN M-PG	Black	2	Non-melting	-30 to 1400

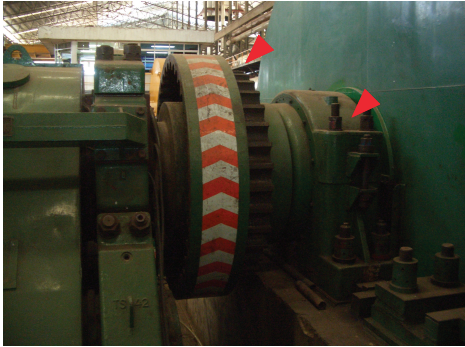
2 High-speed Couplings



The high-speed coupling in the milling system requires grease with extreme-pressure and anti-wear properties. Tacbecon SCG 50S is an ideal lubricant for high speed application as it protects against wears and provides resistance against water and corrosion.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SCG 50S	Li/Ca	2	>190	-20 to 120

3 Low-speed Couplings



When transmitting power from secondary reduction gear box to drive the open gear, loading pressure in the coupling is extremely high. Tacbecon SCG 100S with lithium calcium complex thickener is selected to reduce friction and to cushion shocks from heavy load.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SCG 100S	Li/Ca	2	>190	-20 to 120

4 Open Gear



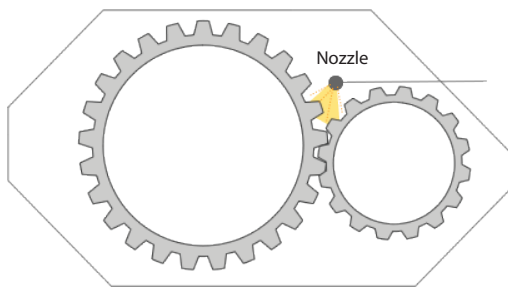
The open gear is the largest gear in the sugar milling system. It transmits huge amount of power to the crusher for juice extraction. Due to high-loading pressure, the open gear requires a speciality lubricant to prevent the gear from damages such as:

- heavy pitting on metal surface;
- scoring on gear surfaces;
- breakage on the gear teeth

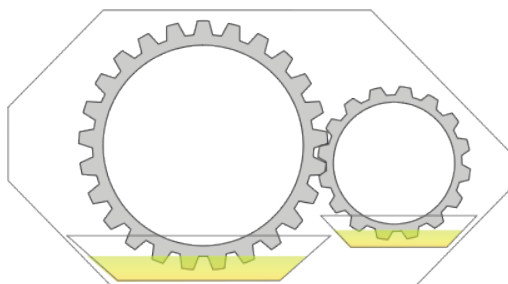
These damages are commonly caused by inappropriate use of lubricant. One of these reasons is the usage of conventional lubricant (e.g. asphalt based) which does not have the ability to lubricate all the metal surface, leaving the exposed metal vulnerable to damages while meshing with other gear teeth.

The newly formulated lubricant, Tacbecon SOG series, is specially designed for the open gear application. Added with superfine graphite, the lubricants provide a low coefficient of friction suited for applications involving high temperature and high loads carrying situation.

There are two types of lubricating systems which are commonly implemented by the sugar mills - i.e. oil sump and spraying system.



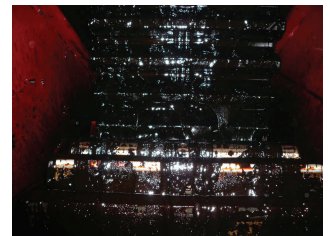
1 Spraying System



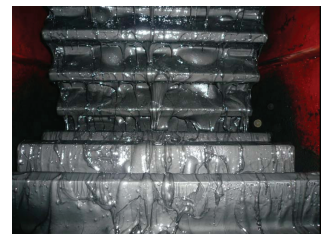
2 Oil Sump



Heavy pitting on metal surface



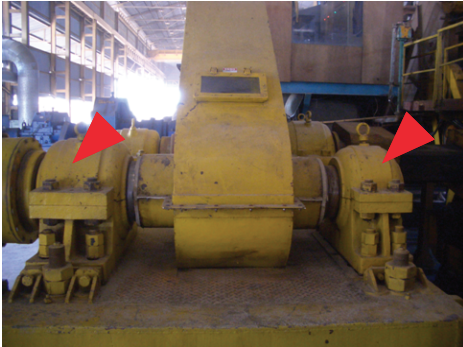
The metal surface is not fully coated



The gear surfaces are fully coated with Tacbecon SOG 3000

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
1 TACBECON SOG 600	Al Complex	0	>190	-10 to 130
1 TACBECON SOG 3000B	Al Complex	0	>200	-10 to 150
2 TACBECON SOG 3000	Al Complex	000	>200	-10 to 150

5 Supporting Bearings



The supporting bearings require lubricant that can withstand the shock and heavy-loading pressure. Tacbecon SG 1000S is best suited in this application.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SG 1000S	Li/Ca	2	>190	-20 to 120

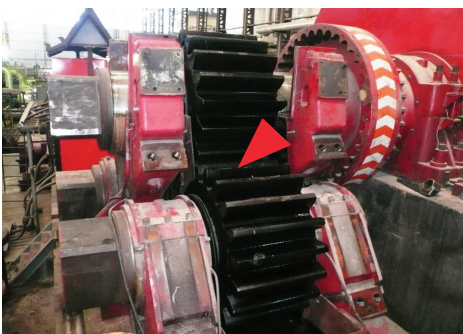
6 Tilt Bar



The function of tilt bar is to drive the crusher pinion gear set. Tacbecon SOG 3000B is recommended for this application as it provides an excellent interface for friction-reducing.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SOG 3000B	Al Complex	0	>200	-10 to 150

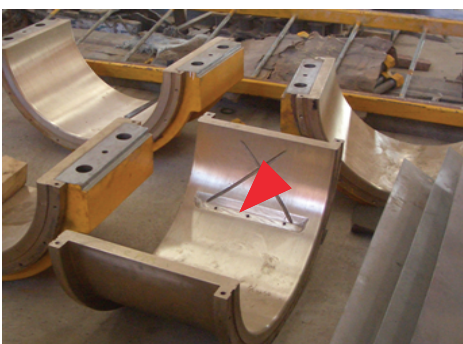
7 Crusher Pinion Gear



Similar to open gear system, the crusher pinion gearbox requires Tacbecon SOG 3000 lubricant to protect the gear teeth from wears and tears while performing under heavy load.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SOG 3000	Al Complex	000	>200	-10 to 150

8 Journal Bearings



Journal bearings require high viscosity and heavy load carrying property lubricants which help to reduce friction and shock-load in the rotating crusher shaft.

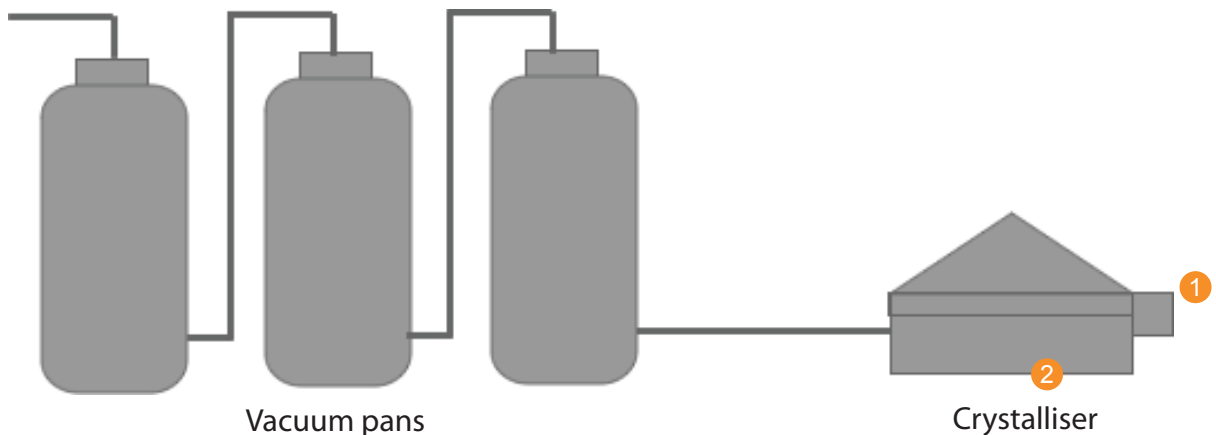
Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON BSC 1650	Lithium	1.5	>180	-10 to 150



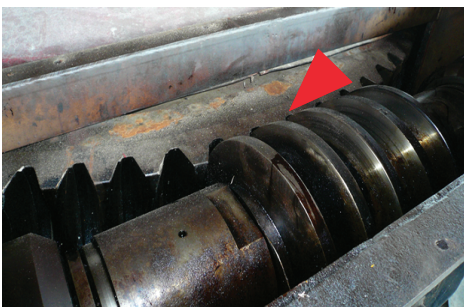
Crystallisation

In order to turn the sugar into a crystalline form it is now necessary to evaporate more water. This is done at a reduced temperature and pressure in large vessels known as vacuum pans. Syrup is fed to the pans and as the water is evaporated off, the crystals of sugar begin to grow. When the pan is full of mixture of sugar crystals in syrup, the contents are then discharged into large holding vessels known as crystallisers.

Lubricant Solutions for Crystalliser



1 Worm Gear



The worm gear at the crystalliser requires lubricant with high loading pressure when converting the molasses to sugar crystal. Tacbecon SOG 3000 protects the gear against wears and tears.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SOG 3000	Al Complex	000	>200	-10 to 150

2 Shaft Bearing



Tacbecon SG 1000S long-lasting grease is an excellent lubricant choice to protect shaft bearing from damage and it can act as a damper against vibration and shock loads.

Lubricants	Thickening Agent	NLGI	Dropping Point (°C)	Operating Temp (°C)
TACBECON SG 1000S	Li/Ca	2	>190	-20 to 120



Contact Tacbecon

Can't find a lubricant in our brochure that meets your requirements or looking for custom formulations or product recommendations? Need processing or technical assistance?

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