



DRAFT



MASERING

Location: Caypa Mine – Guajira Colombia, South America

Average Temperature: 32°C

Equipment:

- Liebherr 9350 (1)
- Liebherr 9250 (3)
- Caterpillar 785C Haultrucks (12)
- Caterpillar 777D/F Haultrucks (10)
- Caterpillar Support Equipment

Start Date SLS Products: March 2018

Results:

1. Noticeable cooler temperature on stick and boom pin and bushings.
2. Lower temperature evidenced by thermography report performed (see table below)

	PREVIOUS			SLS				Diferencia
	Abr. 2017 Temp. (°C)	Jun. 2017 Temp. (°C)	Prom. Temp. (°C)	Ago. 2018 Temp. (°C)	Sept. 2018 Temp. (°C)	Oct. 2018 Temp. (°C)	Prom. Temp. (°C)	
Stick-Balde RH	48.1	40.6	44.4	42.5	39.4	35.8	39.2	5.1
Stick-Balde LH	51.8	41.2	46.5	38.7	37.8	37.1	37.9	8.6
Stick-Biela RH	53.2	39.7	46.5	40	36.2	35.6	37.3	9.2
Stick-Biela LH	46.8	40.7	43.8	37.9	37.2	36.2	37.1	6.7
Link-Balde RH	48.9	40.1	44.5	36.4	35.3	33.8	35.2	9.3
Link-Balde LH	42.8	39.1	41.0	37.9	37.6	36.6	37.4	3.6
Cilindro Volteo-Biela RH	54.9	42.3	48.6	38.3	36.2	36.3	36.9	11.7
Cilindro Volteo-Biela LH	48.1	45.7	46.9	39	37.1	35.7	37.3	9.6
Cilindro Boom RH	58.8	53	55.9	47.2	39	42.9	43.0	12.9
Cilindro Boom LH	56	58.4	57.2	47.5	38.1	42.2	42.6	14.6

3. Pin and bushing overhaul interval increased by 30%
4. Line boring expenses on field have decreased by 40%
5. Grease pumps have shown 50% life increased
6. After initial injectors failure during first 2 months of change, they have shown life increased from 10 to 16-month life duration average.