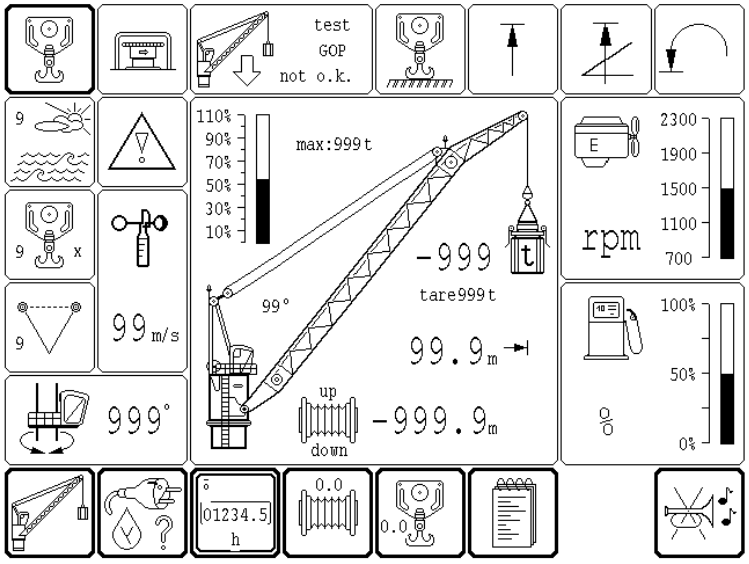
Liebherr Offshore Crane – MTC, BOS, CBO type standard feature
Liebherr 海上吊机 – MTC, BOS, CBO 类型 标准功能

1) Safe Load Indication System Litronic
安全吊重显示系统



实时触摸屏幕资料给操作员使用：

安全负载指示（ＳＬＩ），超载保护，预设提升重量，回转角度，海况，各种限位，投影半径，风速，钢丝绳提升／变幅速度，使用多少钢丝绳，燃料表，等等.

2) Load moment limiting device Litronic
吊重力矩限位装置

3) Load data recorder Litronic
吊重数据记录

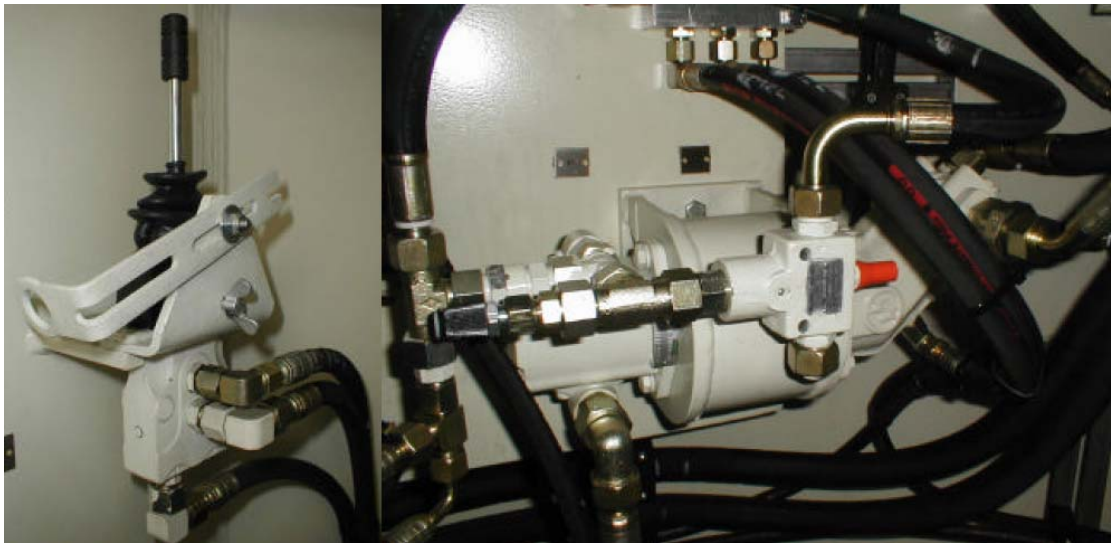
4) Constant tension System (CTS) Litronic for Main & Whip hook.
主钩及辅钩的恒张力系统

5) Gross Overload Protection Litronic (GOPS) - If programmed into the system, the Gross Overload Protection System (GOP) will activate automatically at an overload situation of 150% on the selected hoist (main or auxiliary). As soon as the 150% overload signal is sensed by the relevant load cell, the GOP valve will be triggered and disengage the hoist winch brake to lower the load under controlled condition.
总载超载保护系统 - 假如在系统上编好程序，总载超载保护系统会自动启动所选择的提升（主钩或辅钩）的超重状态为 150%，一旦 150%超载信号被传感器感应，超载保护阀门将触发及提升绞车的刹车脱离，以下放负载在可控制的状况。

6) Emergency Rope Release (ERR)
应急钢丝绳释放系统

The LIEBHERR Emergency Rope Release System has been design to enable the crane operator to release the rope in case the hook is caught on an out of control supply vessel and the vessel would cause tensioning on the rope. For such a situation, the ERR system can be activated by pressing the “yellow button” beside the red emergency stop switch.
LIEBHERR的应急钢丝绳释放系统设计已确保吊机操作员可以释放钢丝绳如吊钩被供应船抓住失控及供应船引起张力在钢丝绳上。在此情况，应急钢丝绳释放系统可以除了红色的紧急停机键外，按下“黄色紧急键”来启动。

7) Emergency Lowering System (ELS) – including lower load, lower boom & turn the crane
紧急负载下放系统 – 包括下放负载，下放吊臂及转动吊机。

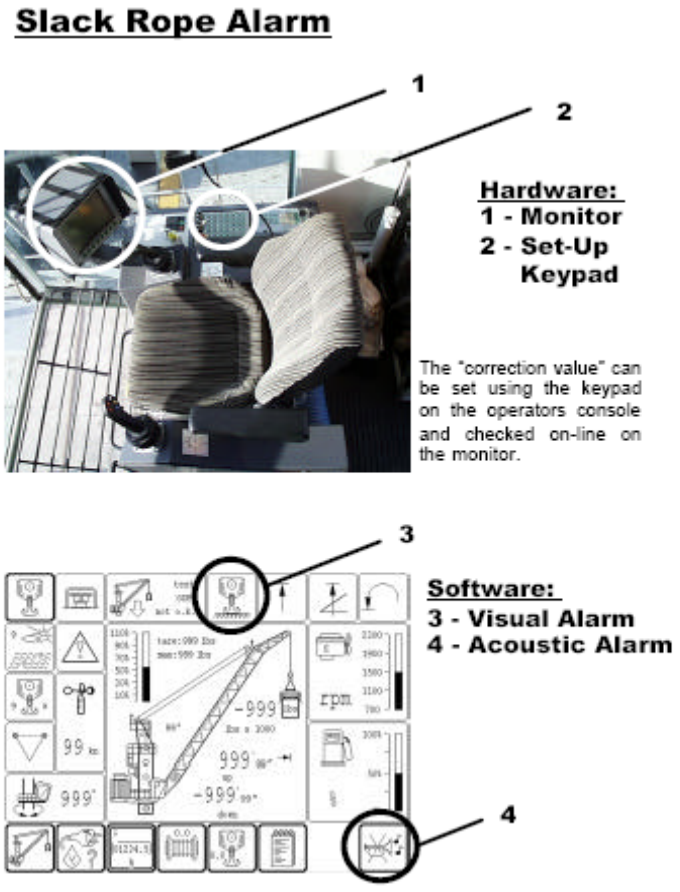


8) Limit Switch System for Hoisting Gear electric
起吊机构限位开关

9) Limit Switch System for Luffing Gear electric
变幅机构限位开关

10) Warning horn electric
电子报警器

11) Slack Rope Protection System Litronic
滚筒上的钢丝绳需配备防松脱保护，避免钢丝绳出现打扭。
LIEBHERR 海上吊机的系统配备保护提升时钢丝绳松脱保护装置，以免引起操作中断及/或损坏。此系统的原理是在每一个卷扬上配置负载测量装置(针式或测压元件)，用于安全负载指示 (SLI) 及负载力矩限制(LML)的信号。吊钩将产生信号到吊机控制系统，它是正确的并带有"正确的数据"，一旦信号数值是低于"正确的数据"，也就是吊钩落在甲板上，对所选择的卷扬将停止下降功能。"钢丝绳松脱信号"将启动在吊机操作室内屏幕的声音及可视报警。



12) Closed loop hydraulic circuit - .
闭式液压回路

a) Much more precise for operating the crane
更精确的操作吊机

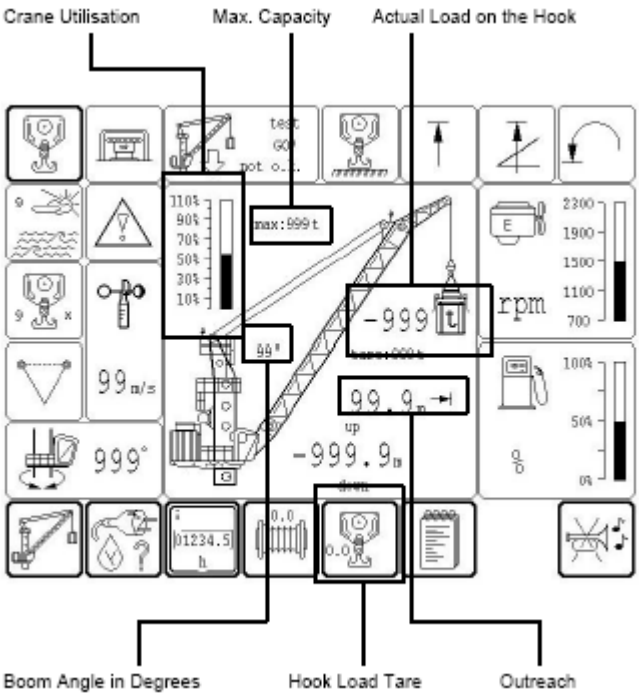
b) Each function (slew, boom and hoist) has its own pump and motor circuit. If one circuit is down – all others can still work.
每个动作（回转，吊臂及提升）有独立的泵及电机回路。假如其中一个回路发生故障，其它的动作仍然能够工作。

c) A closed loop system does not develop excessive heat like an open loop system.
闭式液压回路系统并没有像开式回路产生过多的热量。

13) Electronic control system – Using latest technology by CANBUS with Touch screen & joystick to operate the crane.
吊机电子控制系统 – 使用 CANBUS 最新技术带触摸屏及操纵杆来操作吊机，

吊机控制系统储存各种吊机历史数据，并可传送到计算机上作打印。
如：

Date Duration of Operation	作业时间记录
Crane Utilisation	吊机使用状况
Max. Capacity	吊机最大能力
Actual Hook Load	实际吊钩负荷
Boom Angle in Degrees	吊臂角度
Hook Load Tare	吊钩净重
Outreach	工作半径范围



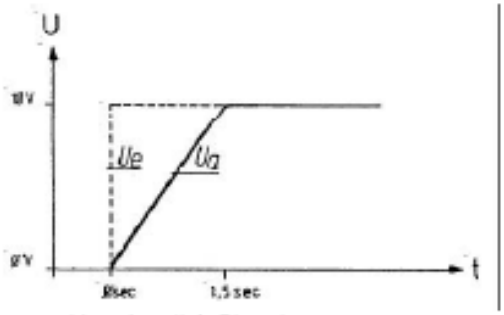
14) Using top quality Bosch Rexroth hydraulic components.
使用顶级质量的Bosch Rexroth液压元件

15) LEBUS Grooving on all Hoist Drums
LEBUS 排绳系统用于所有绞车上

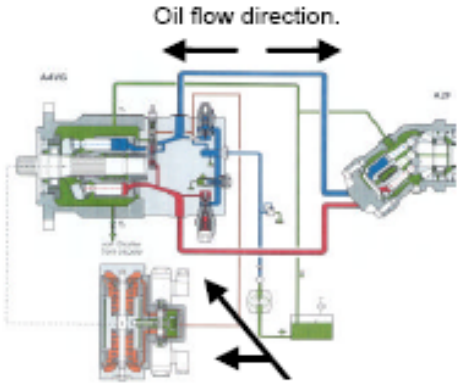
16) Hoist Acceleration Control (integrator) Litronic
提升加速控制

In principle, if the joystick is operated straight from zero to max. speed, the electronic will take this signal and delay it as per the set parameters. This will give the system time to overcome the mechanical delay cause the rope getting slackened on the drum due to the mechanical delay within the reeving system and cause the rope on the drum to create a “bird nest” situation or even damage the rope.

原理是，假如操纵杆直接从零到最高速，电子元件将取此信号及按已设定的参数来作延持，这将给系统克服绞车在提升时作高速加速，由于机械延持引起对绞车内的钢丝绳变成“鸟巢状”或损坏钢丝绳的情况。



Ue - Joystick Signal.
Ua - Ram signal into crane control



Pump Control Valve