

1 企业概要

Company, Plant/Factory Profile

1.1 君乐宝乳业集团成立于 1995 年，28 年来始终专注于奶业发展，为消费者提供健康、营养、安全的乳制品。农业产业化国家重点龙头企业、国家高新技术企业、国家乳品研发技术分中心。2015 年君乐宝所有液态工厂通过欧洲 BRC 食品安全全球标准 A+级认证，奶粉工厂通过 BRCAA+认证，成为全球第一家通过 AA+认证的奶粉企业。

经过 28 年的发展，自建牧场 17 家，现代化生产基地 21 个，拥有员工 1.4 万余名是河北省最大乳品企业。

1.1 Junlebao Dairy Group was established in 1995. For 28 years, Junlebao Dairy Group has always focused on the development of dairy industry, providing consumers with healthy, nutritious and safe dairy products. National key leading enterprise of agricultural industrialization, national high-tech enterprise, national dairy research and development technology sub center. In 2015, all liquid factories of Junlebao passed the European BRC Global Food Safety Standard A+certification, and the milk powder factory passed the BRCAA+certification, becoming the world's first milk powder enterprise to pass the AA+certification.

After 28 years of development, it is the largest dairy enterprise in Hebei Province with 17 self built pastures, 21 modern production bases and more than 14000 employees.

1.2 威县君乐宝乳业有限公司位于河北省邢台市威县，隶属于君乐宝乳业集团鲜奶事业部，总占地 106.71 亩，设计年产能 31.2 万吨。整体项目含有两个主体车间，一车间总投资约 4.3 亿元，日生产能力 455 吨，于 2019 年 3 月正式投产；二车间总投资 2 亿，日生产能力 320 吨，于 2021 年 8 月正式投产。

1.2 Weixian Junlebao Dairy Co., Ltd., located in Weixian County, Xingtai City, Hebei Province, is subordinate to the Fresh Milk Business Department of Junlebao Dairy Group, with a total area of 106.71 mu and a design annual capacity of 312000 tons. The overall project consists of two main workshops. The total investment of the first workshop is about 430 million yuan, and the daily production capacity is 455 tons, which will be officially put into operation in March 2019; The total investment of Workshop II is 200 million, with a daily production capacity of 320 tons, and it will be officially put into operation in August 2021.

1.3 威县君乐宝乳业有限公司以悦鲜活产品等为主打品牌。产品分为悦鲜活 2 个系列，10 个品项，生产规格有瓶装、袋装，采用 159° C 0.09S 巴氏奶瞬时杀菌工艺，4 条袋装生产线日生产能力 80 吨，3 条瓶装生产线日生产能力 440

吨；学生奶 2 个系列，7 个品项，生产规格为盒装，采用 137° C 4S 灭菌乳杀菌工艺，4 条产品生产线日生产能力 255 吨。

1.3 Weixian Junlebao Dairy Industry Co., Ltd. takes Yue Fresh Products as its main brand. The products are divided into 2 series and 10 items of Yuexianhuo. The production specifications include bottle and bag. The instantaneous pasteurization process of 159 ° C 0.09S is adopted. The daily production capacity of 4 bagged production lines is 80 tons, and that of 3 bottled production lines is 440 tons; There are 2 series and 7 items of student milk. The production specification is boxed. The sterilization process of 137 ° C 4S sterilized milk is adopted. The daily production capacity of 4 product production lines is 255 tons.

工厂正式员工 430 人，直接人工占比 81%，大专及以上学历占比 47%，司龄 3 年以上员工占比 75%，40 岁以下占比 83%，人员学历普遍较高属于一个年轻的生产团队，学习能力较强，容易接受新的管理理念。

There are 430 regular employees in the factory, 81% of whom are direct workers, 47% of whom are college graduates or above, 75% of whom are over 3 years old, and 83% of whom are under 40 years old. The employees are generally highly educated and belong to a young production team with strong learning ability and are easy to accept new management concepts.

2. 制造改善里程碑

Milestone on the Journey of Manufacturing Excellence

2.1 2019 年 8 月公司运营引入 TPM 理念，2020 年 4 月开始深入开展 TPM 活动，2021 年 1 月全面启动 TPM 活动：DMS 日常管理系统、5S 现场管理、9 大支柱（FI\AM\PM\QM\EM\ET\SH\ENV\OM-SC）管理，开始改善活动，塑造工厂改善氛围，提升全员改善意识；

In August 2019, the company introduced the TPM concept into its operations. In April 2020, it began to carry out TPM activities in depth. In January 2021, it will fully launch TPM activities: DMS daily management system, 5S on-site management, and nine pillar (FI AM PM QM EM ET SH ENV OM-SC) management. It will start to improve activities, shape the factory improvement environment, and enhance the awareness of all employees;

2.2 2019 年 3 月 HACCP 认证，2020 年 12 月引进 BRCGS 系统并认证，从生产过程质量控制，质量管理体系搭建，质量文化塑造，专注产品品质提升；

HACCP certification in March 2019, BRCGS system introduced and certified in December 2020, focusing on product quality improvement from production process quality control, quality management system establishment, quality culture shaping;

2.3 从 2019 年 8 月到 2020 年 4 月自主推进 TPM 项目，成立 TPM 委员会、识别工厂短板、开展了一些改善项目、没有外部机构专业老师辅导，推进效果不明显；

From August 2019 to April 2020, we independently promoted the TPM project, established the TPM committee, identified the factory's weaknesses, carried out some improvement projects, and did not have the guidance of professional teachers from external institutions, so the promotion effect was not obvious;

2.4 2020 年 4 月份举行了 TPM 启动大会，由深圳大野咨询公司（C&K Consultancy Co.Ltd.）邱老师顾问团队辅导推进，TPM 被正式引入，全面展开；

In April 2020, the TPM kick-off meeting was held, which was guided and promoted by the consulting team of Mr. Qiu from Shenzhen C&K Consultancy Co. Ltd., and TPM was formally introduced and fully launched;

2.5 2023 年 12 月威县公司高分通过 TPM 优秀奖 A 类审核，235 我们争取获得 TPM 优秀奖 A 类继续奖，继续倡导全员参与改善，力争在 2029 年获得特别奖，努力实现成为“打造世界级高端鲜奶制造引领者”的愿景。

In December 2023, our company in Weixian passed the TPM Excellence Award A-class review with high scores. We strive to win the TPM Excellence Award A-class Continuing Award and continue to advocate for all employees to participate in improvement. We strive to win a special award in 2029 and strive to become a leader in creating world-class high-end fresh milk manufacturing.

3. 工厂获益 **Benefits Achieved**

3.1 自从 2019 年引入 TPM 以来，工厂设备综合效率提升明显、设备故障率、小停机次数、产品不良、市场投诉数量等指标有明显的下降，人员改善意识和改善能力得到了提升；

Since the introduction of TPM in 2019, the comprehensive efficiency of plant equipment has improved significantly, the

equipment failure rate, the number of small downtime, the number of defective products, the number of market complaints and other indicators have decreased significantly, and the awareness and ability of personnel to improve have been improved;

3.2 通过 TPM 推进，极大的提高了公司改善氛围，逐步形成了支柱和职能部门之间的协作，不断的促进损失的持续减少，追求卓越，为公司持续的发展提供基本的运营保障。

Through TPM promotion, the company has greatly improved the atmosphere, gradually formed the cooperation between the pillar and functional departments, constantly promoted the continuous reduction of losses, pursued excellence, and provided basic operational guarantee for the company's sustainable development.

4.改善关键项目

Key of our Manufacturing Excellence

在 TPM 推进过程中，推行克朗斯瓶线快速切换改善项目，成立改善小组，由 TPM 项目组组织小组成员进行检讨，原因分析、制定措施、改善实施验证等活动，经过不断的改善，目前共优化换型时间 152 分钟按 450 产品来算，可以增加产能 25 吨/天；从换型损失的现状来看，改善效果良好，后期会持续进行改善，同时计划扩展到其他产线，通过不断的努力，持续进行改进，实现其他产线达到同等水平。

In the process of TPM promotion, the Kroner bottle line fast switching improvement project was promoted, and an improvement team was established. The TPM project team organized the team members to review, analyze the causes, develop measures, and verify the implementation of improvement. After continuous improvement, a total of 152 minutes of optimized transformation time is calculated as 450 products, and the capacity can be increased by 25 tons/day; From the current situation of model change loss, the improvement effect is good, and will continue to improve in the later period. At the same time, it is planned to expand to other production lines, and through continuous efforts, continue to improve, so that other production lines can reach the same level.

5. Achievement Record

Company	君乐宝乳业集团股份有限公司 Junlebao Dairy Group CO., LTD
Plant name	威县君乐宝乳业有限公司 Weixian Junlebao Dairy Co., Ltd
TPM Slogan/Objectives	构建精益体系、导入精益方法、打造精益流程、发展精益文化 Build a lean system, introduce lean methods, create lean processes, and develop lean culture
Year when TPM activity started	2019-08-01
Year of benchmarking	2020-04-01

Category	Index (Calculation Formula)	Unit	Kick off/TPM Started (or last time awarded)	Actual Status		
				Actual Status	Actual Status	Actual Status
Enter the year →			2020	2021	2022	2023
S	Number of work-related accidents requiring days off work	Cases/ year	0	1	0	0
S	Number of work-related accidents not requiring days off work	Cases/ year	0	0	0	0
P	Annual production	Ton/year	70447.7	112068.1	146,488.06	183760.55
P	OEE (or Overall Plant Efficiency)	%	63.95%	67.54%	72.71%	76.94%
P	Availability	%	75.30%	77.20%	80.50%	84.01%
P	Performance Rate	%	85.70%	88.23%	90.90%	92.10%
P	Quality Products Rate	%	99.10%	99.16%	99.37%	99.45%
P	failure rate	%	4.95%	1.64%	1.47%	0.73%
P	MTBF	Hours	47.39	58.09	79.50	156.68
P	MTTR	minutes	70.67	68.28	60.50	37.62
Q	Number of customer complaints	Times/100 tons	2.91	1.2	0.51	0.35
Q	In-line defect rate (scrap)	%	0.60%	0.52%	0.33%	0.23%
C	Cost index	RMB yuan/ton	893.44		797.29	750
D	Production Lead time	hour	95	73	54	46
D	Delivery performance	%	97.50%	98.20%	99.83%	99.02%
S	Frequency rate	Number of occupational accidents with	0	0	0	0

		leave for 1 000 000 worked hours				
M	Number of Employee Suggestions	Number/year	309	846	2012	3427