对纱线质量预报技术软件（YARNSPEC）的介绍
INTRODUCTION TO YARNSPEC

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纱线预报技术软件
YARNSPEC

纱线预报技术软件为现代化纺纱厂提供一个在特定的纺纱条件下采用经过技术限定的毛条从而预测纱线质量的工具

Yarnspec aims to predict what a good modern mill can expect to achieve using a particular wool top for a given yarn under the specified spinning conditions.

纱线预报技术软件

YARNSPEC

这一技术为企业的质量封闭控制系统提供了一个非常必要与有效的工具。通过采用该技术，一个企业可以持续控制和改进加工的表现并且降低成本，提高效率。

This is a powerful and necessary tool for a closed quality control system that enables ongoing improvement and reduces error margins on cost and performance.

纱线预报技术软件
YARNSPEC

目前，纱线质量预报技术只适用于精纺纯毛的纱线生产
Currently, Yarnspec only applies to pure wool worsted yarns.

该技术主要是为了本色机织纱而开发并且经过了大量的验证工作
It was particularly developed for ecru weaving yarns and here it has been most extensively validated.

然而，该技术同时也可以对染色和未经过染色的机织纱与针织纱进行有效的处理
However, it is designed to handle the full range of dyed and un-dyed worsted knitting and weaving yarns.

纱线预报技术软件
YARNSPEC

- 如果企业在纺纱过程中的确达到生产与管理的“最佳状态”，那么本预报技术的确切实可行。
  based on the premise that “best commercial practice”, in terms of spinning performance and yarn quality, is indeed predictable

- 假设在洗毛与制条过程中均按照标准严格地进行操作并且保证纤维的特性能够真实地反映在纺纱过程中。
  assumes that the wool top has been scoured and combed to appropriate standards and seeks to quantify the effect of wool fibre properties of the top on spinning performance

纱线预报技术软件
YARNSPEC

- 对不同纤维的作用与效果可以进行有目的的探索
  enables the effect of different fibre properties to be explored

- 帮助企业寻求在不同的毛条规格中哪一种毛条可以在满足纱线质量的前提下更加节省成本。
  enables a mill to explore whether different top specifications may meet its needs at a cheaper price

一些重要的提示
SOME KEY MESSAGES

- 平均纤维细度是毛条中最为重要的一个参数
  mean diameter is overwhelmingly the most important top fibre property
- 平均纤维长度是第二个重要的参数
  mean fibre length is the next most important fibre property
- 纤维的强度可能是第三个重要的参数
  fibre strength is possibly the third most important factor

一些重要的提示
SOME KEY MESSAGES

- 纤维直径的分布或称纤维离散 – **CVD**是在预料之中的范围以内
  the importance of diameter distribution – CVD – is as expected

- 豪特长度离散在纱线特性与纺纱表现中的作用被夸大
  importance of CVH, on yarn properties and spinning performance, is over-rated

纱线预报
YARNSPEC PREDICTION

赛罗纱线预报技术 – 澳大利亚联邦科学院（**CSIRO**） SIROLAN – Yarnspec, CSIRO Textile and Fibre Technology			
工厂 Mill	基隆纺纱厂Geelong	日期 Date	07-07-2004
纱线记录密码 Yarn code	外部客户 External client	描述 Description	赛罗纺纱 Solospun yarn
羊毛特性 Wool Properties			
羊毛批 Wool lot	外部客户 External client	描述 Description	CSIRO毛条 CSIRO top
纤维直径 Fibre diameter	20.7 µm	细度离散 CV-D	20.8 %
		卷曲度 Curvature	57.8 °/mm
豪特值 Hauteur	93.5 mm	豪特离散 CV-H	46.0%
		% < 30 mm	7.0
纱线强力 Fibre tenacity	10.51 cN/Tex	强力仪校对 Tensor calibration	1.0
防缩处理 Shrink proofed	无 no	染色 Dyed	no
		复洗 Backwashed	no

纱线预报
YARNSPEC PREDICTION

加工细节 Processing Details			
纺纱牵伸 Spinning draft	19.6	钢领 Ring size (mm)	55
纺纱 Spinning (rpm)	9000	钢丝勾数量 Traveller number	23
复精梳 Re-combed	No	钢丝勾重量 Traveller wt (mg)	112
纱线性能 Yarn Properties			
单纱 Singles			
Tex	40.16	公制 Nm	24.9
Twist	429 tpm	公制捻度 Metric twist factor	86.0

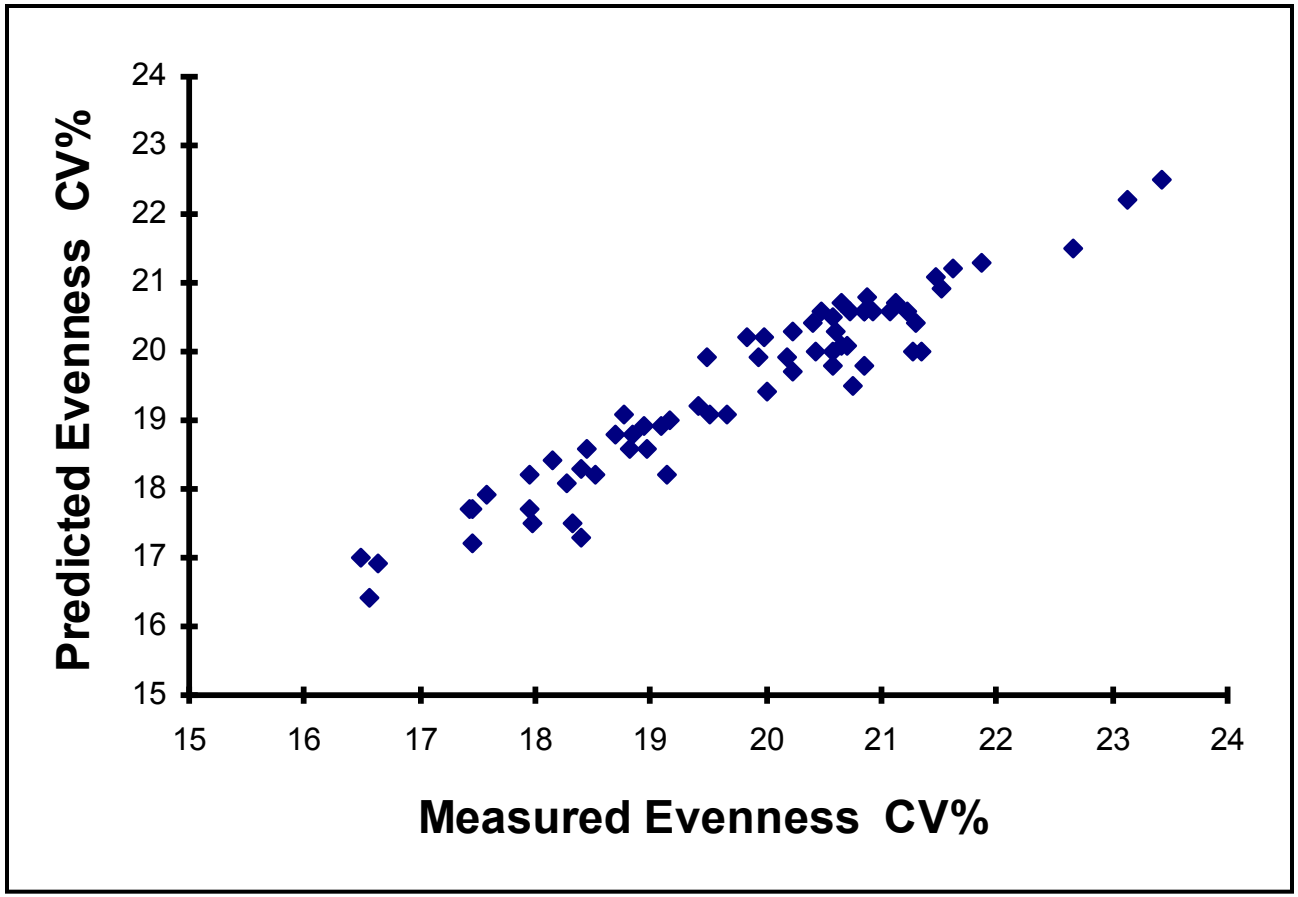
纱线预报
YARNSPEC PREDICTION

条干均匀度 Evenness	预测值 Predicted	检测结果 Measured
I	1.13	
CV %	13.1	
U %	10.5	
细结Thin Places / km	7	
粗结Thick Places / km	1	
毛粒Neps / km	11	
泛毛Hairiness	5.12	

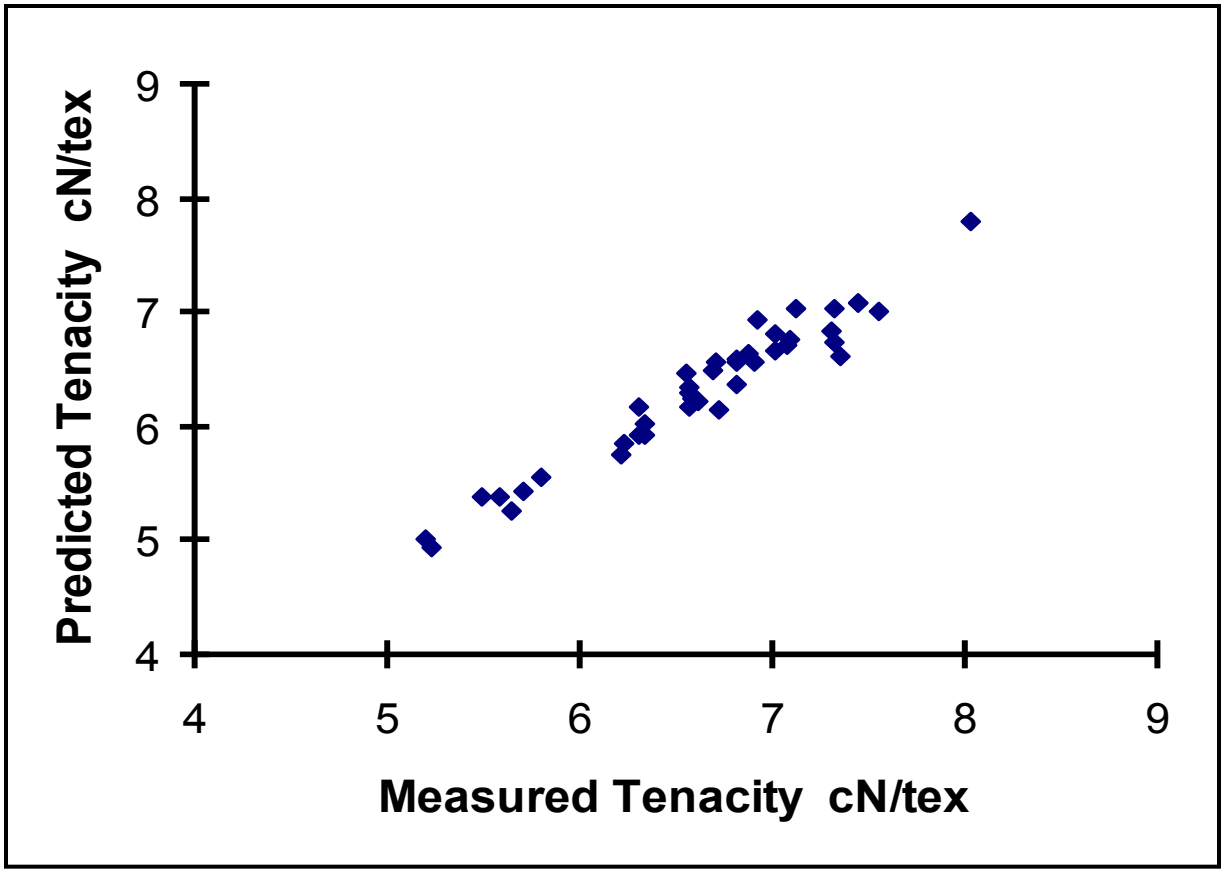
纱线预报
YARNSPEC PREDICTION

	预测值 **Predicted**	检测值 **Measured**
纱线强力 Tenacity (cN/Tex)		
@ 5 m/min	8.03	
纱线延伸度 Elongation (%)		
@ 5 m/min	22.4	
扯断加载 Breaking Load (gF)		
@ 5 m/min	329.1	
断头率 Ends down / 1000 sp.hr	6	

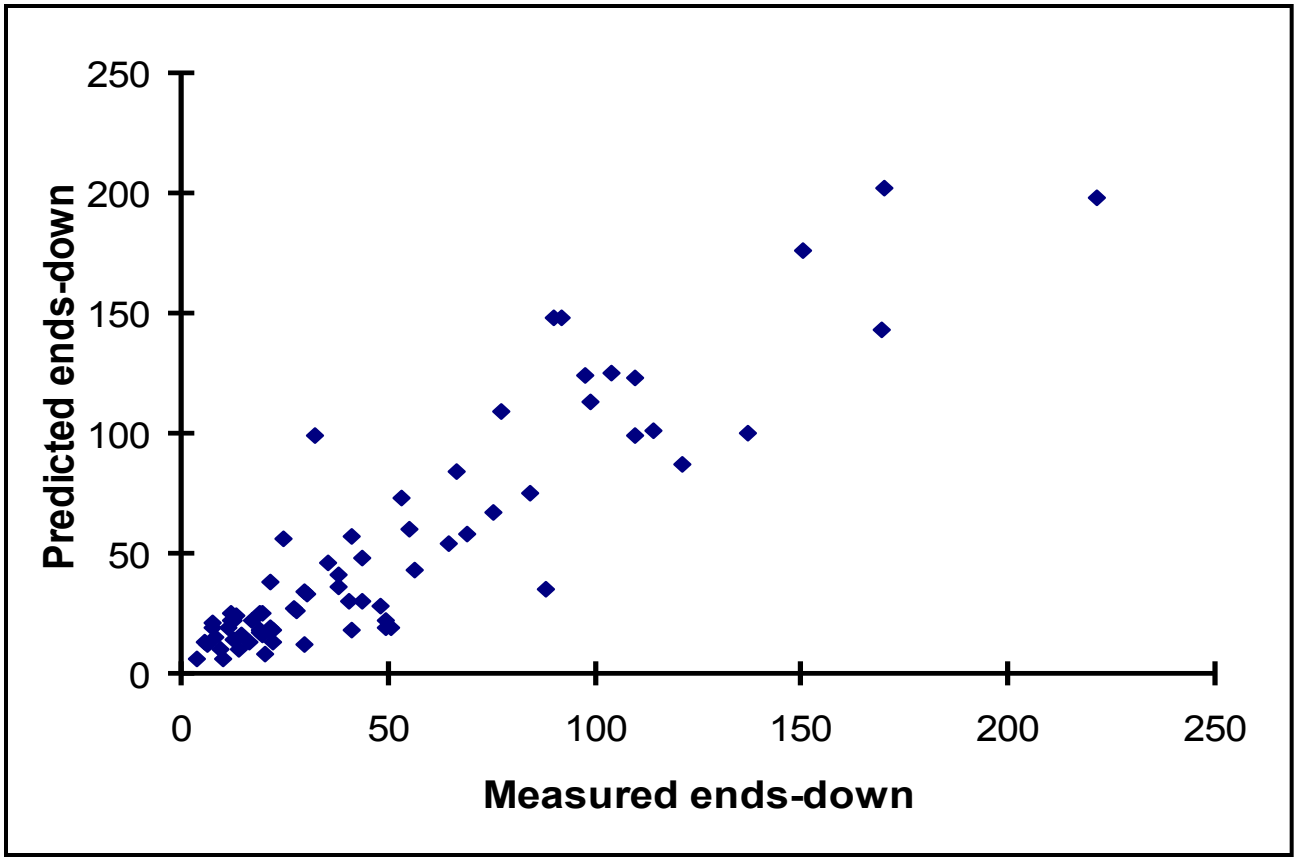
纱线预报 – 条干均匀度
YARNSPEC PREDICTION – Evenness



纱线预报 – 纱线强力
YARNSPEC – TENACITY



纱线预报 – 断头率
YARNSPEC – ENDS DOWN



预测结果

检测结果

纤维直径
FIBRE DIAMETER

直径 Diameter	20	21	22	23	24
纤维根树 No. of Fibres	46	42	38	35	32
均匀度 Evenness (CV %)	18.7	19.5	20.4	21.2	22.2
断头率？ EDMSH	15	26	49	98	215

采用的毛条与纱线的技术指标为：机织纱50，20Tex，636 tpm，细度离散=23%，毛条长度=70豪特，纤维强度=11.12cN/tex，经过复精梳，纺纱速度=9000 rpm，27号钢丝勾以及55 mm钢领。

Using: Nm 50, 20 Tex, 636 tpm, CVD=23%, H=70 mm, fibre tenacity = 11.12cN/tex, re-combed, spun at 9 000 rpm with #27 traveller on 55 mm rings.

毛条长度 - 豪特
HAUTEUR

豪特 Hauteur (mm)	50	60	70	80	90
条干均匀度 Evenness (CV %)	21.1	20.7	20.4	20.0	19.7
断头率 EDMSH	228	92	49	29	19

采用的毛条与纱线的技术指标为：机织纱50，20Tex，636 tpm，细度离散=23%，毛条长度=70豪特，纤维强度=11.12cN/tex，经过复精梳，纺纱速度=9000 rpm，27号钢丝勾以及55 mm钢领。

Using: Nm 50, 20 Tex, 636 tpm, CVD=23%, H=70 mm, fibre tenacity = 11.12cN/tex, re-combed, spun at 9 000 rpm with #27 traveller on 55 mm rings.

纤维的束强
BUNDLE TENACITY

纤维束强 Bundle Tenacity	9	10	11.12	12.24
断头率 EDMSH	123	73	49	37

采用的毛条与纱线的技术指标为：机织纱50，20Tex，636 tpm，细度离散=23%，毛条长度=70豪特，纤维强度=11.12cN/tex，经过复精梳，纺纱速度=9000 rpm，27号钢丝勾以及55 mm钢领。

Using: Nm 50, 20 Tex, 636 tpm, CVD=23%, H=70 mm, fibre tenacity = 11.12cN/tex, re-combed, spun at 9 000 rpm with #27 traveller on 55 mm rings.

纤维直径离散
CV-DIAMETER

纤维直径离散 CV-D %	18	20.5	23	25.5	28
条干均匀度 Evenness (CV %)	19.5	19.9	20.4	20.9	21.5
断头率 EDMSH	26	35	49	72	112

采用的毛条与纱线的技术指标为：机织纱50，20Tex，636 tpm，细度离散=23%，毛条长度=70豪特，纤维强度=11.12cN/tex，经过复精梳，纺纱速度=9000 rpm，27号钢丝勾以及55 mm钢领。

Using: Nm 50, 20 Tex, 636 tpm, CVD=23%, H=70 mm, fibre tenacity = 11.12cN/tex, re-combed, spun at 9 000 rpm with #27 traveller on 55 mm rings.

赛罗纱线预报技术
SIROLAN YARNSPEC

- 一个有效的质量控制工具
  A quality control tool
- 预测纱线的性能与纺纱表现
  Predict yarn properties and spinning performance
- 改进纺纱企业与毛条生产企业之间的沟通
  Improve communication between topmaker and spinner
- 根据纺纱厂的要求有的放矢地生产符合特点的毛条
  Tailor top properties and price to meet spinner's needs

行业评论
INDUSTRY COMMENT

"通过对纱线预报技术的采用，企业的质量管理系统从根本上发生了变化。现代化的科学手段与预控制系统改变了经验行事的方式方法。这一改变对改进纱线质量起到了至关重要的作用"

如意集团总经理蒋惠在国际毛纺织组织（**IWTO**）**2001**年**70**届年会上的发言

"By adopting the spinning prediction technology, the quality control system at the mill has changed from 'Experience Based System' to 'Scientific Pre-Known & Pre-Control System', which has resulted in a significant improvement in yarn quality."
Ms Jiang Hui, General Manager, Ruyi Group, 70th IWTO Shanghai Conference 2001

行业评论
INDUSTRY COMMENT

“兰州三毛与众多中国的精纺厂一样建立了一整套内部管理的机制以便保证质量……这些企业已经放弃了过去的管理观念并且正在积极采用新的管理模式。这就更需要我们能够用科学的手段预测加工的表现……我们充满信心地认为中国的毛纺织工业正在摒弃传统的管理方法。随之而取代的是科学的和崭新的系统。“

兰州三毛副总经理王维于**2004**年国际毛纺织会议上的发言

“Lanzhou Sanmao and most Chinese worsted spinning mills have established internal quality control and quality assurance systems. … These companies have abandoned the old experience–based quality control concept and adopted a new system, which is based on scientific objective measurement and processing prediction. … We are confident to say that the Chinese wool industry is definitely moving from the traditional experience-based management towards the scientific know-how new system.”
Ms Wang Wei, Vice General Manager, Lanzhou Sanmao, 2004 IWTO Shanghai Conference

行业评论
INDUSTRY COMMENT

“根据过去几年的实践可以证明纱线预报技术（**Yarnspec**）是一个在毛纺织企业中非常有用的质量控制工具。对于企业对纱线质量分析而言以及纤维与纱线之间的关系确认等方面均起到了至关重要的作用，特别是对澳毛的加工。该技术可以使企业清楚了解自己根据质量的情况在现代纺纱工业中所处的位置，以及与世界先进水平之间的距离。”

2005年中国**8**所工厂联名给澳大利亚羊毛创新公司的公开信

“Practice in the last few years has demonstrated that Yarnspec is a useful quality control tool for the wool industry. It plays a key part in diagnosing quality problems from wool fibres to yarn. For Australian wool processing, in particular, it enables mills to compare their yarn quality with the world best practice and know exactly where they stand.”

Open letter to AWI from eight leading Chinese mills February 2005