

# 丰业为家

## 第二章 精益求精

CHAPTER II. EXCELLENT QUALITY



华润水泥认为，商誉的基础建立在品质之上，公司持续优化生产管理系统，完善生产过程和工艺，投入资金研发新产品，提升产品品质，多角度打造精益求精的品牌。

CR Cement believes that goodwill is built on the basis of quality. With the aim of multi-faceted excellence in brand building, the Company continuously optimizes its production management systems, improves production process and technology, invests in R&D of new products and improves product quality.

### (一) 多元产品 / Diversified Products

华润水泥了解市场需求，为满足不同工程所需，推出多元化的水泥、熟料及混凝土等产品，可用于修建高层建筑及基建工程，如水电站、水坝、桥梁、港口、机场、铁路及公路等。

2017年，公司的水泥、熟料及混凝土对外销量分别为7,590万吨、795万吨及1,346万立方米，较2016年分别减少5.2%、增加63.6%及增加8.6%。另外，公司针对袋装市场进一步细分，推出新产品——“王牌工匠”高端装修专用水泥，已在广东、广西上市并实现销售。

With an in-depth understanding of the market demand, CR Cement launches diversified cement, clinker and concrete products to cater the needs of various projects for construction and repairs of high-rise buildings and infrastructure projects such as hydroelectric power stations, dams, bridges, ports, airports, railways and roads.

In 2017, our external sales volumes of cement, clinker and concrete were 75.90 million tons, 7.95 million tons and 13.46 million m<sup>3</sup>, representing a decrease of 5.2%, an increase of 63.6% and an increase of 8.6% over 2016 respectively. In addition, for further market segmentation of cement sold in bags, the Company had launched a new and high-end renovation cement product branded "Wang Pai Gong Jiang" in Guangdong and Guangxi.

### (二) 创新智造 / Innovative and Intelligent Production

#### · 产品创新 / Product innovation

2017年，华润水泥着眼于市场需求和行业前景，持续推广并优化“王牌工匠”装修水泥、透水混凝土，启动了预拌水泥、低钙熟料、装饰混凝土、海工水泥等新产品的研发。

In 2017, focusing on market demand and industry prospects, CR Cement continued to promote and optimize the renovation cement branded "Wang Pai Gong Jiang" and pervious concrete. We also commenced R&D of new products including ready-mix cement, low-calcium clinker, decorative concrete and cement for marine engineering.



2017年，公司产品对外销量

水泥 7,590万吨

熟料 795万吨

混凝土 1,346万立方米

IN 2017, our external sales volumes of cement, clinker and concrete were 75.90 million tons, 7.95 million tons and 13.46 million m<sup>3</sup>



“王牌工匠”装修水泥  
Renovation Cement branded "Wang Pai Gong Jiang"

“王牌工匠”装修水泥已于2017年4月28日在广东的珠三角市场和广西的南宁市场全面上市。该产品具有“专业配方、省心省力、绿色环保”等特点，受到客户好评。

Renovation cement branded "Wang Pai Gong Jiang" was officially launched in the markets of Pearl River Delta market in Guangdong and Nanning in Guangxi on 28 April 2017. We received positive feedbacks from customers on its "professional formula, highly efficient, environmentally friendly" attributes.

#### 高抗蚀海工水泥研发

R&D of cement for marine engineering with high resistance to corrosion

该产品是国家“十三五”重大研究项目的核心产品，由我司与中国建筑材料科学研究院总院有限公司、华南理工大学、中交第四航务工程局有限公司等单位联合开发，目标是研发、生产出高抗蚀的海工水泥并应用到国家重点海洋工程。2017年已完成部分基础研究。

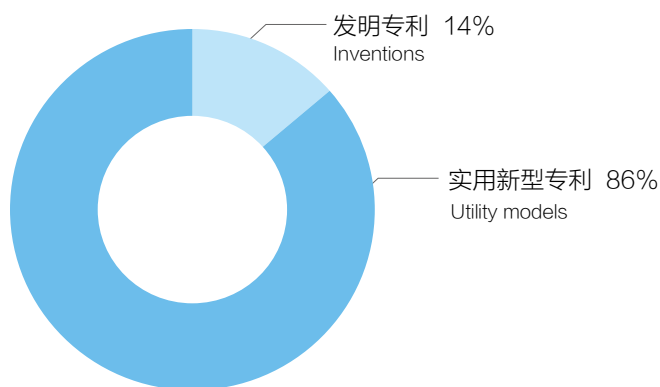
It is the core product under the major research project during the "Thirteenth Five-Year". The Company, China Building Materials Academy Co., Ltd, South China University of Technology and CCCC Fourth Harbor Engineering Co., Ltd. jointly launched the R&D of cement for marine engineering with high resistance to corrosion with an aim of mass production and application to core national marine engineering projects. In 2017, part of the fundamental research had been completed.

#### · 专利发明 / Patented inventions

为了进一步激发员工创新热情，推动技术进步，华润水泥重新修编了《华润水泥专利管理办法》（2017年版）。2017年申请专利69项，已获得专利证书33项。截至2017年12月底，公司共持有专利证书110项（其中发明专利15项，实用新型专利95项），并在内部应用率高达90%，主要应用于节能减排、效率提升和新材料等方面。

In order to stimulate the staff's enthusiasm for innovation and promote technical advancement, CR Cement had revised the Patent Management Measures of CR Cement (2017 version). In 2017, we applied for 69 patents and had been granted 33 patent licenses. As of the end 2017, we also held a total of 110 patent licenses, including 15 inventions and 95 utility models. 90% of the patent licenses had been applied internally, mainly for energy saving, emission reduction, efficiency enhancement and new raw materials.

持有专利证书（截至2017年底）/ Patent Licenses (as of the end of 2017)



#### · 知识产权保护 / Protection of intellectual property

华润水泥既充分尊重他人的知识产权，也高度重视自身知识产权保护。2017年公司积极开展知识产权工作，持续向《中华人民共和国反不正当竞争法（修订草案）》反馈意见，内部修订《华润水泥专利管理办法》《华润水泥控股有限公司品牌建设操作指引》。

CR Cement not only fully respects others' intellectual property rights, but also pays keen attention to the protection of its own intellectual property. In 2017, the Company proactively commenced work on intellectual property by continuously providing

feedbacks on the Anti-Unfair Competition Law of the PRC (Revised Draft) and by revising the internal policies of Patent Management Measures of CR Cement and Operation Guideline for Brand Building of CR Cement.

### · 全员创新 / All-staff innovation

2017年5月，公司发布《华润水泥创新管理体系建设规划》，规范创新流程管理，进一步系统化创新工作。同时期望增强跨行跨界交流，借鉴及优化项目运作机制，完善创新平台，形成全员创新良好氛围。

In May 2017, the Company promulgated the Construction Plans for Innovation Management System of CR Cement to regulate the management of innovation processes and further systematize its innovation work. Meanwhile, it is expected to create a positive ambience for all-staff innovation by strengthening inter-sector exchanges, learning past experience from others, optimizing mechanisms for project operation, and improving the innovation platform.



创新主题培训

Innovation-themed training

为培育创新系统思维，公司举办了创新主题培训，课程涵盖《创新思维系统》等相关内容，各单位关键岗、创新负责人等50位学员参加了培训。

In order to cultivate innovative system thinking, we organized innovation-themed training with courses covering the Innovative Thinking System and other relevant contents. 50 students from key positions and persons-in-charge of innovation of each department participated in the training.



第二届华润水泥创新大会

The Second Innovation Conference of CR Cement

2017年，公司举办了第二届华润水泥创新大会，分享行业前瞻研究及产品、技术创新规划，邀请10家外部合作单位介绍最新创新成果，并评选、颁发创新成果相关奖项。

In 2017, the Second Innovation Conference of CR Cement was organized to share industry outlook for researches, products and plans for technological innovation. 10 external partners were invited to introduce the latest innovations, adjudicate innovation achievements of the Company and presented relevant awards.

- 根据市场需求生产水泥产品，合理安排混合材资源。
- To produce cement products according to market demand, and reasonably arrange resources of mineral admixture.
- 每批进厂原材料检测。
- To test each batch of raw materials.
- 对生产基地原材料资源质量情况进行普查，建立完善的资源档案。
- To carry out general surveys on the quality of raw material resources at the production plants, and build a comprehensive record of the resources.

- 市场调研，为生产提供前端服务。
- To conduct market research to provide front-end services for production.
- 根据客户使用反馈，不断改善产品。
- To continuously improve the products based on customers' feedback.
- 技术研发中心开展创新研究。
- To conduct innovation research at Research and Development Centre.

### （三）卓越品质 / Excellent Quality

#### · 质量管理 / Quality control

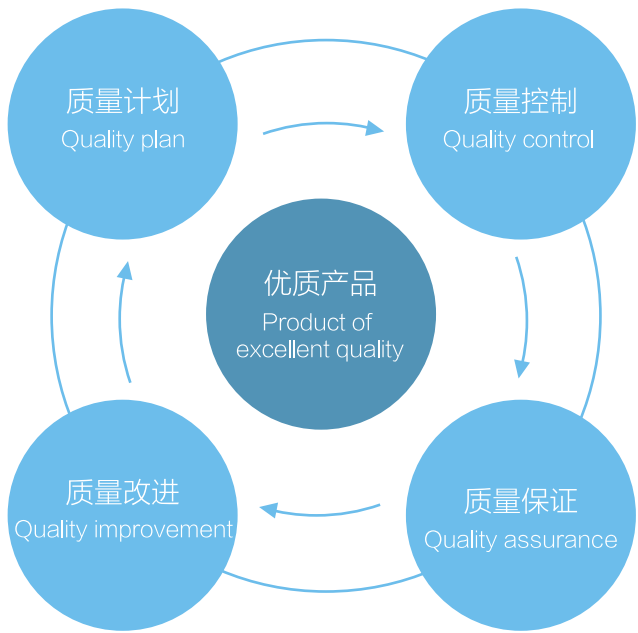
公司在《华润水泥管理手册》之质量管理篇中对生产流程各细节管理均有清晰及严格要求，包括原料管理、煤炭管理、生料、熟料管理等质量标准，确保管理到位，每步骤达至合格要求。化验室设备、维修保养、检定要求、操作指引、环境配置、档案纪录亦一概标准化列入管理手册，为产品质量鉴定赋予保证，助力产品质量达到标准。另外，设立质量事故管理标准，对事故作出判定，提供不合格产品处理方案、赔偿标准、召回机制及处理流程等。

公司依托完整有效的质量管理体系对基地产品质量进行管理和评价，将生产过程及产品的关键质量指标纳入大区、基地业绩考核范畴，以绩效管理不断推动各单位的质量建设，为消费者提供优质产品。

此外，华润水泥还通过开展多项精益改善项目，持续提升质量、工艺、节能减排等方面的管理水平。在平南、弥渡、合浦等基地开展了生料在线分析技术的试点工作，使配料的合格率得到进一步提高，为下一步生料配料无人值守奠定了基础。更于2017年底，完成第100台包装机的技术升级改造，改善员工现场工作环境安全的同时，为公司创造了较大的经济价值。



完成第 100 台包装机的技术升级改造  
The technological upgrade of the 100th packaging machine was completed



- 质管部 24 小时对熟料、水泥的生产过程进行监督检测。
- To supervise and test the production process of clinker and cement on a 24-hour basis by quality control department.
- 生产过程层层把关，实行质量考核。
- To evaluate quality throughout the production process.

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- 与国家水泥质量监督检验中心合作，对比验证。
  - To conduct comparative tests in co-operation with the National Quality Supervision and Testing Center for Cement
  - 每年组织两次从原料到产品全覆盖的质量专项检查，重点排查和治理氯离子、六价铬、放射性等毒害物质。
  - To conduct special sample inspections on quality covering from raw materials to products twice every year, and focus on investigation and control of toxic substances including chloride ions, hexavalent chromium and radioactive substances.

Pursuant to the Quality Management Chapter in Management Manual of CR Cement, the Company maintains clear and strict requirements for management of every details in production process including quality standards for management of raw materials, coal, raw materials and clinker to ensure appropriate management and compliance with the quality requirements in each step. Laboratory equipment, repairs and maintenance, inspection requirements, operating instructions, environmental configuration and filing records are all standardized and covered in the management manual to guarantee the verification results of product quality and ensure up-to-standard product quality. In addition, management standards for quality incidents have been established to identify and diagnose the accidents, and provide handling proposals, compensation standards, recall mechanisms and handling procedures for unqualified products.

The Company relies on a comprehensive and effective quality management system to manage and evaluate the quality of the products from its production plants. It incorporates the key quality indicators of the production process and products into the performance appraisal of the operating regions and production plants as a continuous drive for better quality of all departments through performance management, so as to provide consumers with products of excellent quality.

In addition, CR Cement continued to enhance its management levels in terms of quality, technology, energy saving and emission reduction through implementation of various lean improvement projects. We carried out pilot work of online analysis technology of raw materials at our production plants in Pingnan, Midu and Hepu etc.

to further increase the passing rate of batching, which had laid a solid foundation for unmanned batching of raw materials for the next step. At the end of 2017, the technological upgrade of the 100th packaging machine was completed, creating greater economic value for the Company whilst improving production safety in the staff's onsite working environment.

#### · 标准研究及应用 / Research and application of standards

华润水泥充分利用广州技术研发中心在助磨剂有效成份检测方面取得的技术突破，制定了《华润水泥控股有限公司助磨剂管理办法》，定期对各基地进厂助磨剂进行质量抽查，促使供应商稳定生产助磨剂产品，在稳定基地水泥生产、提升产品质量、降低助磨剂使用成本方面取得了良好的效果。同时，公司联合湖南大学等高校和科研机构共同起草了国家标准《水泥助磨剂生产用液体原材料测定方法 - 气相色谱法》。

为解决镍铁冶炼产生的废渣占用土地、污染土壤、污染水体等一系列的社会问题，公司开展对镍铁渣综合利用的研究，并与中国建筑材料科学研究总院等单位和企业，共同起草了国家标准《用于水泥和混凝土中的镍铁渣粉》，在实现资源开发良性循环可持续发展方面做出了积极的贡献，打造企业品牌的同时，提高了企业在同行业和市场的知名度。

CR Cement had fully utilized the technological breakthroughs achieved by the Research and Development Centre in Guangzhou in testing the effective ingredients of grinding agents, and formulated the Administrative Measures for Grinding Agents of China Resources Cement Holdings Limited. We would regularly conduct sample checks on the quality of the incoming grinding agents of each production plants and procure the suppliers' stable production of grinding agent products, thereby achieving sound results in stabilizing cement production at the production plants, improving product quality and reducing costs of using grinding agents. At the same time, we have drafted the national standard Testing Methods of Liquid Raw Materials for Use in Production of Cement Grinding Agents—Gas Chromatography in co-operation with universities and research institutes such as Hunan University.

In order to solve a series of social issues including land occupation, soil contamination and water pollution by slag from ferronickel smelting, the Company conducted research on the comprehensive utilisation of nickel-iron slag, and drafted the national standard Nickel-iron Slag Powder for Use in Cement and Concrete in co-operation with relevant units and enterprises such as China Building Materials Academy, in order to make positive contributions to the virtuous cycle of resources exploitation and sustainable development while building our corporate brand and enhancing our corporate recognition in the industry and the market.

