



“Renoir brought to Impro a fundamental change in the management philosophy and behavior which enabled our management to be much more structured, efficient and effective.”

**Dong Wang**  
**Factory Director**

### Key Results

ROI for this project is  $\geq 7:1$

35% increase of Overall Equipment Efficiency (OEE)

42% reduction of Scrap Loss Rate  
 (47%: Casting, 38%: Machining)

94% reduction of late deliveries

Reduced Customer Complaints by 58%

Reduced Machine Down Time by 58%

## Impro Industries – Yixing & Taizhou

Subsidiary companies of Impro Group Limited

Impro Precision Industries Limited is an integrated manufacturer of highly engineered, precision component parts, supplying leading global companies operating in heavy-duty and high horsepower engines for automotive, hydraulic equipment, marine, aerospace, healthcare and other end markets. They are the leaders in the Chinese investment casting industry. Subsidiary companies of Impro Group, Impro Yixing specializes in small casting and while Impro Taizhou specialize in sand casting of small component parts.

### ANALYSIS

Impro management was looking for sustainable solutions to further improve their product quality and production efficiency. After implementing the Caterpillar Lean & Production Systems (CPS), they invited Renoir to conduct an Analysis, focusing on production, quality and machining. Impressed with Renoir's approach and the identification of opportunities for improvement, Impro decided to proceed with implemented Projects at YiXing and Taizhou. Some of the major opportunities identified included:

- Front line and middle level management lack structure, objectives, efficiency and effectiveness. “Fire-fighting” rather than proactively identifying and solving problems was the norm.
- Overall equipment efficiency (OEE) is 37.8%. Most losses are due to changeover, waiting for orders, no operator, lack of tools and machine breakdown.
- 32% of changeover activities are nonvalue adding and could be eliminated.
- An example of poor preparation processes included 37 minutes to prepare one knife, compared with the standard of 5-10 minutes.
- Lack of quality control during the casting process, leading to 12% scrap loss rate
- Maintenance is for repairs only. There is no regular machine maintenance.

### APPROACH

GMA The Project covered casting, machining production, quality, and machining with the following objectives:

- Improve OEE
- Reduce Scrap Loss Rate
- Reduce customer complaints and on time delivery compliance
- Reduce machine down time

Based on the opportunities identified and the project targets, practical tools and systems were developed and customized, including:

### World Leaders in Sustainable Change

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“Renoir provides a systematic approach to identify the improvement opportunities through a production management control system.”

**Qiyong Ye**  
**Executive Deputy General Manager**

## THE RENOIR GROUP

Renoir Consulting is a world leader in sustainable, implemented change. Founded in 1994, Renoir has offices located in North and South America, UK, Europe, Turkey, Middle East, Southern Africa, India, Pakistan, China, South East Asia and Australasia. With over 350 fully employed and highly trained consultants, their work across a wide range of industry sectors gives them a broader perspective of the issues facing your business, allowing them to be sensitive to your unique challenges, culture and specific business issues. This cross-pollination ensures truly effective, rapid and sustainable solutions.

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1. Management by Walking about and Short Interval Controls
  - Walkabout Checklist was developed to standardize the management activities. This tool was genuinely effective in driving front-line and middle level management to proactively identify, analyze and solve problems to close gaps occurring in day to day operations.
  - Short Interval Controls on OEE were developed to drive production to take instant action on machine stoppage
  - Short Interval Control on Plan Vs Actual
2. Setting up a 'Water Spider' to distribute raw material so that operators can spend more time on their operations
3. Developed a 'one-stop' service warehouse and redesigned the production preparation process to reduce the knife preparation and changeover time
4. A preventative quality control system was developed and implemented
  - Standardized the scrap definition so that the Golden Samples were made accordingly
  - Set clear scrap responsibility and targets for each process to drive quality improvement
  - Root cause of scrap was analyzed based on historical data
  - Developed FMEA and optimized Control Plan
  - Developed Quality Report to monitor quality closely and take corrective actions accordingly.
5. Machine Management Control System (MCS)
  - KPIs were defined to monitor machine management and control. Machine lists and maintenance standards were developed and a Machine Resume was designed to record repair and maintenance histories
  - Yearly, monthly and weekly maintenance plans were made with clearly defined maintenance items, responsibilities and dates.
  - Walkabouts by machine people to check production self-maintenance were set up. Machine management Kanban was designed to enhance the internal and external communications
  - Designed weekly and monthly management reports and set up the weekly meetings to review the KPIs and define follow-up actions

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