# ISO 9001:2000 Certification of Blairmont Sugar Factory- *The steps taken*

Sharma Dwarka and Henry Lung Kit
Guyana Sugar Corporation Inc.
Ogle East Coast Demerara, Guyana

## ABSTRACT

This study was done to highlight a very simple and practical approach to documenting, implementing and maintaining a quality management system that is compliant to ISO 9001:2000 in a sugar factory. It also deals with the benefits associated with having such a system especially for a factory focusing on production of raw brown sugar for direct consumption (value added product).

The entire process of ISO 9001:2000 certification at Blairmont Sugar Factory was analyzed and steps from "start" to "certification" were derived. These steps indicate in a practical way, the decisions/actions taken at different points in the process during the quest for certification. Data comparison indicated that such a system was beneficial to the factory and product marketability. The process of establishing a quality management system compliant to ISO 9001:2000 in a raw brown sugar factory is not difficult and the benefits are most desirable.

## INTRODUCTION

Blairmont Sugar Factory was chosen for ISO 9001:2000 certification mainly because it is the premier direct consumption sugar factory in GuySuCo. In fact, it is the only factory in GuySuCo that produces packaged raw brown sugar for direct consumption.

This factory produces two branded products. These are:

1. Demerara Gold (1 kg, 2 kg, 5 kg & sachets)
2. Demerara Brown (900 g & 1800 g)

By placing direct consumption packaged products into the market place, it was clear that GuySuCo will be competing directly with other producers of packaged sugar for market shares. It was noted that the success of these products hinged on GuySuCo's ability to satisfy customer requirements, stated or implied.

After reviewing the ISO 9001:2000 standard (Quality Management Systems-Requirements) it was clear that this standard will provide the necessary tools required for CUSTOMER SATISFACTION. The company decided to adopt the requirements of this standard at the Blairmont Sugar Factory in order to achieve this goal. Hence, the main reason for moving towards ISO certification was to ensure TOTAL CUSTOMER SATISFACTION for the products and services offered by Blairmont Sugar Factory.

Towards the end of 2003, the company formalized the decision that it will be establishing a quality management system at its premier direct consumption sugar factory that satisfies the requirements ISO 9001:2000.

## MATERIALS AND METHOD

The method that GuySuCo used to achieve ISO 9001:2000 certification of its premier direct consumption sugar factory was simple and effective. This study looked at the entire certification process and identified the steps necessary for certification of Blairmont Sugar Factory. A total of 16 steps were identified.

The steps taken were:

**STEP 1:** Top management took a firm decision to implement a Quality Management System that would satisfy all the requirements of the ISO 9001:2000 standard.

**STEP 2:** Top management allocated proper resources to implement the above decision. These included:

a) Human Resources (Management Representative [ISO coordinator] & Core team to "prepare, implement, maintain & improve" the Quality System)
b) Time (meeting of the documentation & implementation team to discuss issues in documentation).
c) Financial Resources (Fees/ charges for Trainings, documentation/ outsourced consultancy and ISO certification/ audit charges

**STEP 3:** Training of key staff members
Two members of staff were trained in documenting, implementing and auditing a quality management system by external consultants.
This training was funded by a CIDA/ CPEC project in collaboration with the Guyana National Bureau of Standards.

**STEP 4:** A **gap analysis** was conducted by an external consultant - existing business system was reviewed in comparison with the requirements of ISO 9001:2000.

This analysis determined what was required of GuySuCo to have a quality management system at Blairmont Sugar Factory that is in keeping with the requirements of ISO 9001:2000. Due to the structure of GuySuCo, it was clear that the following departments would be covered under the certification:

a) Blairmont Sugar Factory
b) Personnel Department- Blairmont
c) Marketing Department
d) Personnel Department- Head Office

**STEP 5:** Formation of the Quality Council

A steering committee called the "Quality Council" was formed on February 12th 2004. The members include:

a) Chief Executive Officer- Chairman
b) Marketing Director
c) Human Resources Director
d) Technical Director
e) Factory Operations Manager
f) General Manager- Blairmont
g) Factory Manager- Blairmont
h) Regional Technical Manager- Berbice
i) Regional Process Technologist- Demerara
j) Personnel Manager- Blairmont
k) Personnel Manager- Head Office
l) Training Manager- Head office
m) Product Development Manager
n) Production Manager- Blairmont
o) Quality Manager- Blairmont

At the first meeting of this committee, it was established that its main role would be to deal with all matters related to ISO certification. It was also confirmed that the Factory Operations Manager would be the Quality Coordinator/Management Representative responsible for reporting to the CEO on all issues related to the quality management system.

**STEP 6:** Documentation of the quality policy document.
This is the guiding document on quality which dealt with the scope of quality management system, quality objectives, and functional/departmental targets/goals. It is the Level I document.

**STEP 7:** Documentation of the six mandatory procedures required by the ISO 9001:2000 standard (attached is an example of the document control procedure).
Procedures form the Level II document in the quality system.
These procedures include:

a) Control of Documents
b) Control of Records
c) Control of Nonconforming Products
d) Internal Audit
e) Corrective Action
f) Preventive Action

**STEP 8:** Documentation of other quality procedures, work instructions and calibration procedures required for operations in specific departments

Work instructions and calibration procedures form the Level III document.
Other quality procedures formulated include:

a) Internal communication
b) Identification of training needs and provision of required training
c) Maintenance of plant and equipment
d) Handling of customer complaints
e) Review of contracts and customer orders
f) Evaluation of suppliers
g) Identification and traceability
h) Control of monitoring and measuring devices
i) Soliciting and analyzing customer feedback and satisfaction
j) Monitoring and measurement of product
k) Recall of product

Work instructions formulated include (attached is an example of the punt dumper work instruction):

a) Punt dumper operations
b) Start- up & shut- down procedures for the #1 & #2 knife turbines
c) Start- up & shut- down procedures for the mill turbine
d) Boiler operations
e) Mixing boiler water chemicals
f) SRI clarifier operation
g) Rotary vacuum filter operation
h) Evaporator operation
i) Syrup clarifier operation
j) Boiling A & B strike
k) Preparing a granulation
l) Boiling of C strike
m) High grade centrifugal operation
n) Low grade centrifugal operation
o) Operation of GV3 packaging machine
p) Operation of GV4 packaging machine
q) Delivery of sugar
r) Quality records
s) Customer complaints
t) Secretary to the Director, Marketing
u) Shipping and Documentation Officer
v) Filing- Personnel Department
w) Recruitment and induction- Personnel Department

Calibration procedures formulated includes:

a) Calibration of the AG245 mettler toledo balance
b) Calibration of the PG 2002S mettler toledo balance
c) Calibration of the MW suma talameter
d) Zero checking & setting of GPR11-37 refractometer
e) Calibration of the optical activity polarimeter
f) Calibration of the suma pH meter
g) Calibration of the cane scale (every crop)
h) Testing of the cane scale (weekly)
i) Calibration of the automatic pH controller electrode
j) Calibration of the avery berkel L130 platform scale
k) Calibration of the temperature gauge
l) Zero setting of the pocket refractometer (PAL1)

**STEP 9:** Training of internal auditors
Persons were selected from different departments and were trained to conduct internal audit by the members of staff that were trained in **STEP 5**.

**STEP 10:** Establishment of an Implementation Team
This team comprised of at least one member from each department involved in the certification.
The members formed the core team:

a) Factory Operations Manager- ISO Coordinator/ Management Representative.
b) Regional Process Technologist- Demerara- Factory Operations Department.
c) Regional Technical Manager- Berbice- Factory Operations Department.
d) Product Development- Marketing Department.
e) Personnel Manager- Personnel Department
f) Quality Manager- Blairmont Sugar Factory

This team was tasked with the responsibility of aiding departments in the implementation process.

**STEP 10:** Implementation of the newly established "Quality Management System" on a fixed date
Date of implementation at GuySuCo was 29th September 2004.

All employees were briefed on the implementation date. They were advised on the importance to follow all procedures and maintain all records as required by the quality system procedures.

**STEP 11-** Commencement of internal audits approximately one month after implementation date

**STEP 12:** Conduct first Management Review Meeting.
This meeting reviewed the quality management system to ensure suitability, adequacy and effectiveness. It also assessed opportunities for improvement and the need for changes to the quality management system.

**STEP 13:** Application for certification to Certification Body- SGS
Manuals (Policy and Procedures Manuals) were submitted for approval/ documentation review/audit. Initial certification charges were paid to the certification body. SGS indicated that they will be conducting a pre-assessment audit

**STEP 14:** Pre- Assessment audit conducted by SGS auditor
Auditor made a short visit mainly to have an understanding of the operations.

**STEP15:** Registration audit conducted by SGS auditors
This audit was held on November 14th-16th 2005. At the end of the audit, the auditors concluded that the quality management system met the requirements of ISO 9001:200 and made a recommendation to SGS for the facility to be certified.

**STEP 16:** Receipt of original certificate from SGS

The entire process of achieving ISO 9001:2000 certification at Blairmont Sugar Factory took approximately two (2) years. The certification date was November 16th 2005.

The certification normally lasts for a period of three (3) years. During this period, it was established that the SGS will be conducting annual surveillance audits of the quality system. After the three (3) year period the company will be having a complete re-registration audit. Blairmont Sugar Factory is due for re-registration audit in September 2008.

The total cost for the registration and surveillance audits over the three year period was US$ 25,525.50.

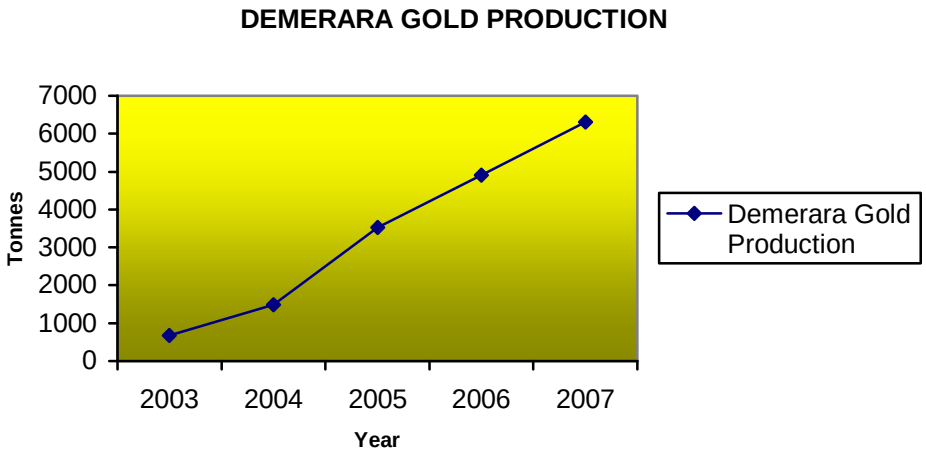
## RESULTS

Production figures for Demerara Gold before and after certification.

| Year | Tonnes |
|---|---|
| 2003 | 672.944 |
| 2004 | 1484.356 |
| 2005 | 3529.077 |
| 2006 | 4907.691 |
| 2007 | 6314.514 |

- The quantity of Demerara Gold produced increased significantly in 2005, 2006 & 2007 when compared to 2003 and 2004 (**Fig 1)**.
- The average production for 2003 & 2004 was 1078.65t while the average production for 2005, 2006 & 2007 was 4917.094t

**Fig. 1- Demerara Gold production for the period 2003-2007**



## DISCUSSIONS

There was significant improvement in the production of Demerara Gold over the period 2005-2007. During this period, the system was fully implemented. Production was relatively low during the period 2003-2004. The main reasons for this improved production were:

a) Improved processing operations
b) Significant reduction in product re-grading

Prior to ISO certification of the Blairmont Sugar Factory, the following was evident:

- Employees were not quality conscious especially in the factory environment.
- There were regular occurrences of out-of-specification sugar. That is, the specification that was set was not achieved resulting in low productivity of DC sugar and increased production cost.
- There were inconsistencies in product quality.
- Working documents not available at the point of use
- Unavailability of station targets at stations
- Unclear roles and responsibilities in a few key areas of the production process

Since the implementation of the quality management system, the following was noted:

- Improvements in processing operation- operators at stations in the factory are using the station target as a guide. They would make adjustments to maintain their station targets.
- Improved correlation between departments covered under the scope of the QMS. Departments understand their role in satisfying customers.
- Operational staff understands their specific roles and jurisdiction. Employees appreciate that they are accountable for specific aspects in the operation.
- Improved product traceability - Our products can now be traced to specific details that were present during operation.
- Consistency in product quality - reduction in customer complaints
- Increased production in packaged sugar production
- Determination of root causes of problems and provision of effective solutions
- Penetration into new direct consumption sugar markets- US, UK, Australia and Caribbean Islands
- Enhance training capability and information flow - Working documents are now available at strategic points.

## ACKNOWLEDGEMENT

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## REFERENCES


1. GuySuCo's Quality Council Minutes
2. GuySuCo's Management Review Minutes
3. International Standard, ISO 9001:2000, "Quality Management System Requirements"
4. GuySuCo's Quality Policy Manual
5. GuySuCo's Quality System Procedures Manual
6. GuySuCo's Work Instructions Manual
7. GuySuCo's Calibration Procedures Manual
8. Blairmont Central Factory Manufacturing Records (2003-2007)