

Compal Electronics Successfully Implements PTC's Product Development System

Global leader adopts business process re-engineering and strengthens core competitive advantages

Compal Electronics Inc., Taipei, Taiwan

Compal Electronics is a leading electronics company, and one of the Original Design & Manufacturers (ODM) vendors in the world. Established in 1984, Compal started as a computer peripheral manufacturer, and today is a leading manufacturer of notebook computers for customers such as Dell and HP, with business operations in Taiwan, China, the US, and the UK. Compal has historically provided a wide range of products, from early CRTs to the modern LCDs. Compal currently offers notebook computers, and is involved in mobile device development, such as mobile phones and smart phones.

In R&D, Compal is committed to reusing platforms and utilizing on-hand resources, minimizing overall cost and enhancing competitiveness. When Compal began manufacturing notebook computers in the 1990's, it also grasped the trend towards handheld computers and mobile entertainment devices, quickly thriving in those markets as well.

The Challenge: Make Global Product Development 'Transparent'

Today, Compal's R&D center is based in Taiwan, while its manufacturing is primarily in China. As its business continues to expand, Compal must reduce the product design cycle, process time, and cost to maintain competitiveness.

- And, as its market grows and new business units are formed, employees must be immediately familiar with the company's working environment, training, and management.
- The company also needed to control costs that directly influence competition and must be minimized in R&D and manufacturing.
- Also, product and technology innovation management are also essential.

The Solution: PTC Product Development System (PDS)

Compal decided to implement PTC's Product Development System, based on PTC's Windchill® PLM (Product Lifecycle Management) solution, to modify the business process and enhance product lifecycles, quality standards, design capabilities, and to reduce costs.

The Results: Integrating All Functional Teams in Development

Achieving a company-wide focus on PLM and business partner cooperation has enabled the success of PTC's PLM solution at Compal.

- ODM process re-engineering: Integration of all functional teams where users employ electronic processes. Product development transparency enables these processes to be tracked and supervised, greatly improving process automation, and serving as a foundation for further improvement.



Compal HQ located in Taipei, Taiwan

- Project management efficiency improvement: Using product development project execution as an example, the product development cycle has been standardized into more than 300 tasks and 400 deliverables. The PTC system tracks each project's execution and timing. Besides tracking the basic tasks required for the product development cycle, customers may also incorporate other configurations to speed the ODM process, based on individual demands. The configuration can serve as a template and be replicated to simplify the entire design process.

“Information transparency has successfully solved the difference in knowledge and information-sharing between R&D and manufacturing. Now, each operation's progress is transparent to the world, greatly reducing product development time and cost, while speeding the overall process.”

—Wen-Kuang Chiu, Senior Manager, Information Systems, Compal and PLM Project Manager

Finding the Right Partner

At Compal Electronics, company policy has been “R&D in Taiwan, manufacturing in China.” With today’s rapid business developments, the Taiwan R&D center has a number of goals: efficiently integrate development resources established by overseas R&D teams, reduce product design lifecycles, and minimize costs. New employees must also quickly adapt to Compal’s environment. To solve these urgent issues, the PLM mechanism provides the best solution to reduce the design-to-product lifecycle, thus preserving quality, improving design capability, and minimizing costs.

Six major criteria in selecting the best PLM solution

The ODM business, with its core in design and manufacturing, demonstrates that a particular product’s future success largely depends on the design cycle, and will influence task processes thereafter. Process modification greatly reduces both product development timing and costs, as well as manufacturing communications. The process can be replicated both in other departments and in new business units. The critical factor in determining the success or failure of Compal’s core competitiveness depends on selection of a business partner with extensive experience in product lifecycle management solutions.

“From our long-term understanding of PLM solutions, we have six major criteria and strict assessments for the PLM implementation team. Only the best team will suffice,” said Wen-Kuang Chiu, Senior Manager Information Systems, Compal and PLM Project Manager.

Within Compal, PLM solutions not only target the Taiwan R&D unit, but also overseas units and suppliers in the UK, South Korea and China. Therefore, global operational support is a major criterion. This includes provision of the financial structure and product blueprint planning of companies that previously used PLM solutions, as well as local technical support and the successful experience of relevant industries. Consulting company support in Taiwan, including personnel, professional knowledge, product awareness, and implementation methods, will also be important in the company’s PLM implementation.

After three assessment stages that evaluated a potential consultant’s understanding of business at Compal, cooperation experience, and individual capability, one was chosen.

In PLM platform selection, system integration and customization flexibility are Compal’s main criteria. Since R&D is primarily based on information and processes, contents include graphics and approval sheets. The system must be able to expand and adapt; even system management must be flexible.

“After a long period of observation, we found that the PLM solutions provided by PTC (Parametric Technology Corporation) have a very complete developmental blueprint in terms of product functionalities—one of the most complete products among PLM developers. After efficiency analysis, we are even more confident in choosing PTC,” said Wen-Kuang Chiu.

Three-stage sequential implementation

Since Compal’s required PLM solutions must be complete and extensive, they range from design and manufacturing preparation to all the requirements demanded by the ODM business. In addition to meeting time-to-market demands, the platform must be flexible enough for large-scale modifications. The PLM team implemented the process in three sequential stages, starting in April 2003:

1. R&D process re-engineering: Extensive analysis and review of R&D design processes, blueprints, and IT system requirements, such as technology development, product definition, and project execution.
2. Infrastructure establishment: Based on first stage results, the functions that satisfy demands were examined and used to develop the platform. The results included shortened PART/BOM processes, engineering document transparency, shortened product design & modification, and integration of existing application systems, such as ERP and CAD. These improvements enabled Compal to use a single system, Windchill® from PTC, to manage a comprehensive product structure for their products that span MCAD, ECAD and Software components. In addition, this new infrastructure enabled Compal to rapidly comply with new environmental regulations, such the EU’s RoHS.
3. Project management: This stage involved integration of time-to-market and product department management demands. Each project is now managed by on-time, on-cost, on-quality, and on-quantity criteria.

“In the past, there was a difference in knowledge and information-sharing between R&D and manufacturing. Now, information transparency solves this problem. The efficiency of each task can be monitored by the entire world, which not only speeds up workflow progress, but also reduces communication in tracking and management. The records allow each process to serve as the foundation for future improvements,” said Wen-Kuang Chiu.

Professional solutions and optimal implementation

After implementing PTC’s Windchill, the PLM team targeted the following problems by discussing optimal solutions for the overall operation:

Process: Examining R&D standard operating procedures and structure to find a common R&D design method, and establish universal language and experience regulations for further analysis and discussion, reducing time spent on communication.

Workflow: Examining the entire workflow to establish responsibility and authorization among employees by clearly defining roles and duties. This establishes an effective authorization mechanism, providing powerful workflow management support. Each pending process or task is a waste. Reducing and simplifying workflow are keys to its management.

Data confidentiality: Through the management mechanism, documents with different levels of importance and confidentiality will have separate authorizations based on employee role and responsibility.

Interface integration: Integrating different interfaces to other enterprise systems, such as ERP, to provide enhanced operation and analysis, targeting system functionality and professional expertise to meet product output demands.

Full devotion to challenging PLM efficiency enhances overall business operations

Compal devoted a great deal of manpower to its PLM implementation. "It's not only the PLM implementation, but also the benefits involved when colleagues at Compal quickly adopt the process. This has been considered in the early stages of planning," said Wen-Kuang Chiu.

During the PLM implementation, 10 Compal IT department employees and 12 professional core users were dedicated to the PLM process. Compal also conducted more than 300 workshops and 100 training sessions. Compal's commitment and PTC's cooperation maximized the PLM implementation's benefits.

Results of Windchill implementation

Using the Windchill platform, Compal has achieved many objectives.

Enhanced communications management: Through the management platform, Compal has reduced the time spent on knowledge-sharing and problem-solving. Standardized workflow allows engineers from different countries to comprehend the knowledgebase using just basic skills. When a project is delayed, awareness has been promoted, enabling control of overall workflow.

Information-sharing increased: The Windchill platform integrates many different solutions, and records data in documents or memos, allowing information-sharing in the corporate environment. This has spanned multiple disciplines involved with the development of their products, such as MCAD, ECAD and software design.

Improved workflow transparency: Information transparency is the most obvious benefit. Windchill improves project execution transparency by reducing search, contact, and handling times. It also increases flexibility and efficiency in project execution.

System integration: The Windchill system was integrated into many key enterprise systems at Compal, such as ERP, streamlining the flow of information between design, procurement and manufacturing.

The Future: New Suppliers, NPI, Compliance

Based on current results, Compal plans to include suppliers and new production information in the PLM platform, in addition to their recent implementation of an Environmental Regulatory Compliance (or Green) system to manage compliant product development and approval sheets.

This new generation of PLM gives Compal benefits in time-to-market, cost control, and quality control. In the mean time, PTC's Windchill effectively links R&D resources in Taiwan and China, giving Compal the lead in the IT ODM market and expanding Compal's overall market influence.