

## 应用案例—加拿大庞巴迪飞机制造公司

### 庞巴迪公司简介

加拿大庞巴迪公司是全球著名的的支线客机和商用飞机制造商，该公司在全球五大洲共有超过 65,000 名员工。庞巴迪公司的钣金类加工机床包括：

- 通快 TC200R 数控冲床
- 通快 TC240 数控冲床
- 通快 TC260 BFZ 数控钣金铣床
- 美国 MULTICAM 数控钣金铣床
- 美国 GFM 复合材料切割机
- 日本 SHODA 数控钣金铣床



### JETCAM 解决方案

庞巴迪公司长期以来一直使用机床原厂软件和其它的通用编程软件。但是，由于编程速度极慢而且排料的材料利用率太低，庞巴迪公司从 2002 年开始寻求将其全球所有工厂集成统一编程的方案。

2003 年，庞巴迪英国工厂首次安装 JETCAM 软件；

2005 年，庞巴迪加拿大工厂安装了 5 套 JETCAM 软件，并且通过网络全球共享编程能力；

2006 年，庞巴迪集团重复采购了多套 JETCAM 软件用于满足其全球需要。

### 用户评价

以下是庞巴迪公司高级应用专家 Phil Bagshaw 先生对 JETCAM 的评价：

“材料利用率平均提高了 15-20%，仅仅碳纤维材料的节省就使我们在 2 个月之内收回了多套软件的全部投资。”

“编程时间比以前提高了 500%”。

“图形快速修复功能在 3 个小时之内修复了 8000 个有问题的 CAD 图形文件。”

“产品加工时间缩短了 5%”

### Case Study: Bombardier Aerospace Belfast

**At a glance:**

- ✘ Replaced UNIX-based system that was expensive to upgrade
- ✘ Programming time reduced by up to 90%. Complex parts are now programmed in under two minutes
- ✘ 10%-15% material saving
- ✘ Enhancement received under maintenance reduced manufacturing time by 30 seconds per part, equating to a potential 166 hour saving across all parts
- ✘ Programming halved the number of machines with a 30% reduction in programming resources
- ✘ Initial technical support requirement 60% less and now minimal
- ✘ Annual support cost is now 60% lower than for previous system

**Bombardier Aerospace Belfast**, Northern Ireland was originally founded in 1908 as Short Brothers, which secured the UK manufacturing rights to the Wright Flyer aeroplanes, thus making it the first manufacturer of aircraft in the world. Shorts was acquired by Bombardier Inc of Canada in 1989 and the Bombardier Group today employs some 65,000 staff across 5 continents. As one of the leading manufacturers of aircraft and components for the aerospace industry, the company is constantly looking for opportunities to streamline all facets of its operations.

The CNC routing machines in Belfast were driven by a US-based CAM system. This had limitations but the cost quoted for enhancing it was prohibitive. In addition, a new Shoda TR Stack Router was being tested to work in conjunction with their existing high speed CNC routing cell, and the additional cost of a new post processor and the required machine support was also expensive for the old system. Bombardier decided, therefore to examine the possibility of replacing it with an up-to-date alternative that could provide the required features. In 2002, after evaluation, the company

selected JETCAM Expert, in particular because of its ease of use and its excellent graphical representation. This made the programming function very simple. Another benefit was that of material utilization. Between 10-15% savings on material have been achieved.

The system was installed in 2003, with batch processing, Automatic Free-Form Nesting and JETCAM provided a direct link to Bombardier's Production Control system to allow orders to be input electronically.

The immediate benefit was a very significant reduction in programming time through the automation features provided. Complex parts that used to take ten minutes were generated in under two, with NC codes immediately available for both machines rather than just one as previously due to the system's ease of use and the programmer's ability to learn the system quickly.

Engineers were surprised at the short duration of the training, which testified ease of use benefits. This also meant that staff were up and running immediately, once training was completed. Due to the

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**Software:** JETCAM Expert Premium, Free-Form high performance nesting and MRP modules

**Machines:** Trumpf 260 BFZ CNC Router, Shoda TR CNC Router, Trumpf 240R CNC Punch Nibbler, Trumpf TC200R CNC Punch Nibbler