**ASCO VALVE CANADA INTRODUCES NEW RED HAT VALVE**

ASCO阀门加拿大推出新的红帽子阀门

With headquarters located in Brantford, Ontario, ASCO Valve Canada is one of Canada’s top producers of solenoid valves. The company was founded in 1965, and since that time it has emerged as a very successful industrial company that currently employs 75 people across Canada. ASCO offers an array of products to its clients. These products range from valves that are used in the gas pipeline industry to valves that are used in medical procedures.

总部位于加拿大安大略省布兰特福德市的ASCO阀门公司是加拿大最大的电磁阀生产商之一。该公司成立于1965年，从那时起，它已经成为一个非常成功的工业公司，目前在加拿大拥有75名员工。ASCO向其客户提供了一系列产品。这些产品范围从用于天然气管道工业的阀门到用于医疗程序的阀门。

One of ASCO’s goals was to develop a valve that could minimize the cost to consumers, including cost of operations and the amount of power consumed. In 2005, ASCO achieved its goal by developing and introducing its new Red Hat Next Generation valves. Today, these valves are well recognized and respected in many different countries due to their exceptional performance in difficult conditions. These valves are also very energy efficient because they are able to use a mere 2 watts of power rather than the 17 watts of power that the typical solenoid valves use. This is a very important cost benefit for any company using valves because these new products can decrease the total cost of ownership by almost 14% over the installed life of the valve.

ASCO的目标之一是开发一种阀门，使消费者的成本最小化，包括操作成本和耗电量。在2005年，ASCO通过开发和介绍它的新红帽子下一代阀门实现了它的目标。今天，这些阀门在许多不同的国家都得到了认可和尊重，因为它们在困难的条件下都有卓越的性能。这些阀门也非常节能，因为它们只需要2瓦的功率，而典型的电磁阀需要17瓦的功率。这对于任何使用阀门的公司来说都是一个非常重要的成本效益，因为这些新产品可以在阀门的安装寿命内减少14%的总拥有成本。

The Red Hat Next Generation valves have many advantages, for example, (1) better and more reliable functionality, (2) reduced usage of power, and (3) modular design. These advantages have allowed ASCO to provide consumers with better quality valves at reasonable prices and ensure fast delivery. Recently, ASCO has made it very clear that one of its objectives was to reduce lead times in order to satisfy customer demand. Within a short period of time, it has already accomplished this and can deliver products to its customers at a much faster rate.

红帽的下一代阀门有许多优点，例如，(1)更好和更可靠的功能，(2)减少功率的使用，和(3)模块化设计。这些优势使得ASCO能够以合理的价格向用户提供质量更好的阀门，并确保快速交货。最近，ASCO已经非常清楚地表明，它的目标之一是为了满足客户的需求而减少交货时间。在很短的时间内，它已经做到了这一点，可以以更快的速度将产品交付给客户。

**Discussion**

1. The new Red Hat Next Generation valves are durable and reliable. They can operate with high air pressure of up to 2,200 psi (pounds per square inch). Suppose ASCO develops a new and stronger version of the Red Hat Next Generation valve, they want to set up an experimental design to test the strength of the new valve, but they want to conduct the tests under three different temperature conditions, 23oC, 49oC, and 68oC. In addition, suppose ASCO uses two different suppliers (supplier 1 and supplier 2) for the synthetic materials that are used to manufacture the valves. Some valves are made primarily of raw materials supplied by supplier 1, and some are made primarily of raw materials from supplier 2. Consequently, a 2 x 3 factorial design is appropriate for the experiment, with temperature and supplier as the independent variables and air pressure (measured in psi) as the dependent variable. An appropriate sampling frame has produced the data shown below. Analyze the data and discuss the business implications of the findings. If you were conducting the study, what conclusions would you report to the company?

1.新的红帽子下一代阀门是耐用和可靠的。它们可以在高达2200 psi(磅/平方英寸)的高气压下工作。假设ASCO开发了一种新的、更强版本的Red Hat下一代瓣膜，他们想建立一个实验设计来测试新瓣膜的强度，但是他们想在三种不同的温度条件下进行测试，23℃、49℃和68℃。此外，假设ASCO使用了两个不同的供应商(供应商1和供应商2)来提供用于制造阀门的合成材料。有些阀门主要由供应商1提供的原材料制成，有些阀门主要由供应商2提供的原材料制成。因此，以温度和供给量作为自变量，而空气压力(以psi测量)作为因变量的2×3因子设计适合于实验。一个适当的采样框架产生了如下的数据。分析数据并讨论调查结果的商业含义。如果由你进行研究，你会向公司报告什么结论?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Temperature** | | |
|  | **23oC** | **49oC** | **68oC** |
|  | 2,257 | 2,207 | 2,201 |
| ***Supplier 1*** | 2,479 | 2,491 | 2,173 |
|  | 2,361 | 2,314 | 2,192 |
|  | 2,215 | 2,230 | 2,229 |
| ***Supplier 2*** | 2,308 | 2,359 | 2,088 |
|  | 2,511 | 2,488 | 2,287 |

1. It is estimated that these Red Hat energy-efficient valves can save a great deal of power usage and lower the total cost of ownership by up to 14% over the installed life of the valve, therefore making the Red Hat valves more attractive. ASCO does business with pipeline companies globally. In an attempt to position itself as a market leader across the world, ASCO is keen on finding out whether the cost saved over the installed life of the valve is significantly different among the different countries in which it does business. Four countries, Canada, Spain, Japan and United States, are chosen for the study. Pipeline companies are selected from each country. The companies keep a log of valve power usage. A random sample of the data is shown below. Test whether there is a difference in relative cost savings in each of these countries. Justify your answer and prepare a short report to present to the management of ASCO in which your conclusions are explained, with support from the statistical test that you performed.

|  |  |  |  |
| --- | --- | --- | --- |
| **Canada** | **Spain** | **Japan** | **U.S.** |
| 12% | 9% | 14% | 13% |
| 14 | 10.5 | 14 | 12.5 |
| 11.5 | 11 | 13 | 14 |
| 10 | 14 | 13.5 | 11.5 |
| 14 | 8.5 | 12 | 14 |
| 13 | 12 | 12.5 | 13 |

1. As previously mentioned, ASCO has been able to reduce its lead time. suppose ASCO’s original lead time average 10 weeks and that the reduction is in the neighborhood of 80%. As such, most lead times now average slightly below two weeks. ASCO is interested in knowing whether lead times differ significantly according to the type of Red Hat valve it is manufacturing. To control the experiment, they will use as a blocking variable the day of the week the valve was ordered. One lead time was selected per valve per day of the week. The sample data are given below in weeks. Analyze the data and discuss your findings.

2.据估计，这些红帽节能阀门可以节省大量的电力使用，并在阀门的安装寿命内降低高达14%的总拥有成本，因此使红帽阀门更具吸引力。ASCO与全球的管道公司有业务往来。为了将自己定位为全球市场的领导者，ASCO热衷于发现，在不同的国家，在阀门安装寿命上所节省的成本是否有显著差异。研究选择了四个国家:加拿大、西班牙、日本和美国。管道公司是从每个国家挑选的。这些公司会记录阀门的功率使用情况。数据的随机样本如下所示。测试这些国家在相对成本节约方面是否存在差异。证明你的答案并准备一份简短的报告提交给ASCO管理，在报告中解释你的结论，并得到你所进行的统计测试的支持。

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***Type of Red Hat Valve*** | | |
|  | ***Two-way*** | ***Three-way*** | ***Four-way*** |
| Monday | 1.7 | 1.9 | 2.2 |
| Tuesday | 1.9 | 1.8 | 1.9 |
| Wednesday | 1.0 | 2.3 | 2.4 |
| Thursday | 1.4 | 1.5 | 1.8 |
| Friday | 2.1 | 2.0 | 2.5 |