

# Hive minds

APS's Dermot Healy spoke with Aldo Viola, Geico Taikisha executive director for sales and global key accounts about the company's new modular paint cell concept, J-Hive



(Left) Customers can configure the octagonal J-Hive cells in a variety of ways (Right) The J-Hive cell allows several movements of the robot and the car body, reaching perfectly all internal and external surfaces



## APS: Can you tell us something of how the J-Hive Concept arose?

**Aldo Viola:** It emerged as a result of a customer's request that we quote for a low volume facility dealing with between six to ten bodies per hour. Obviously we wanted to be competitive, but also wanted to offer the customer a facility which would offer real benefits in terms of energy saving and environmental footprint, along with the ability to deliver consistent high quality results. Our engineers realised that by rethinking the way the paint cell was constructed and configured, developing an innovative octagonal painting cell design, we could offer a flexibility that would bring real benefits. In J-Hive the vehicle body moves along the floor on a rotary table and we use a single robotic paint manipulator, rather than the usual two

robots, with obvious cost savings. Once we made the initial leap away from the thinking of the paint cell in the traditional rectangular form, then it became possible to envisage the fundamental processes involved in a new way. The new shape brings real benefit.

## APS: So in your J-Hive System a single robot can deal with all the tasks involved in painting both body interior and exterior?

**Aldo Viola:** Exactly – it is both simpler and more efficient and most important of all, it is more flexible. Customers can configure the octagonal J-Hive cells in a variety of ways, and motion through the cell can be varied. For example, the body can enter the booth from one side and exit from another

side, rather than in the more rigid path determined by the traditional rectangular paint cell. We know this feature will allow our customers to achieve better utilisation of space within their plant, as well a flexible and appropriate flow within the painting cycle. There is a reduction of around 20% in footprint compared to conventional paint cells and this can make a big difference in congested plants. It allows the J-Hive Cell to be installed alongside existing paint lines and incorporated into existing facilities with comparative ease. The body enters the cell and stops in a defined position where it is checked by a sensor or vision system. Once one side of the body is painted, the body can be rotated 180° on the rotary table so that the robot can complete the other side and any interior surfaces that still require painting. The painting system is carefully synchronised with the motion of the table. Paint application can continue whilst it is moving. The positioning systems ensure the optimum access for the robot to each surface thus improving throughput, minimising waste and reducing quality defects. With our system allowing optimum positioning overspray area is reduced and paint application more controlled and efficient.

## APS: So the rotating table makes it possible for the single robot to do the work of the two robots usually found in the traditional painting booth?

**Aldo Viola:** Yes. The robot has a very large working envelope but with J-Hive we enhance this further as it is mounted on a rotary wheel. This, of course, effectively provides an 8th axis of movement and further enlarges the working envelope. This rotary wheel, which is controlled as an external robot axis, can position the manipulator in the optimum place for best accessibility to all the interior and exterior surfaces. Of course, instead of the robot moving on rails we have the body movement controlled as a 7th axis which assists with positioning as well. We envisage a saving of around 22% in energy consumption due to the reduction of the spray booth area alongside all the other benefits I have detailed. Also, of course, we can configure the robot to deal with closures and panels such as doors, hood and trunk lid. If hinges are already fitted, then the paint robot arm can be programmed to open and close these as required for accessibility. If hinges are not yet fitted then we can install specific robots to manipulate these closures as required to provide appropriate accessibility

## APS: Are there any other benefits that the system can offer? What about maintenance and cleaning and all the other things that accompany paintwork processes? How does your new system measure up in these respects?

**Aldo Viola:** The J-Hive Concept reduces and simplifies many

of the ancillary processes associated with the operation of a paint cell. This we hope will bring our customers cost and quality advantage. So, for example, the sliding floor permits removal of the grids from the booth floor when the robot is functioning and reduces cleaning costs and the labour involved in grid exchange.

Moreover, the reduction in the number of robots (up to 50%) leads to a consequent reduction in the waste of paint and solvent necessary for the colour change and atomiser cleaning. We believe J-Hive will exceed the performance of even the most developed comparable technology systems currently

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available. We think of it as a real advance for our customers. It is compatible with the use of either water or solvent based paints and it can be supplied with different types of scrubbers according to the customers requirements. Our Dryspin and Drycar systems are widely used in the industry and they can be configured to work with J-Hive. The latest

Drycar system separates paint overspray through a highly efficient three-stage filtration process which can block extra fine particulate. It combines the advantages of our Dryspin system in terms of low energy consumption with very high levels of filtration efficiency. J-Hive offers a less cluttered paint cell internal environment which affects the quality of application and robot uptime.

## APS: How far along the development path are you with the J-Hive concept at the moment? Have you installed systems for customers yet?

**Aldo Viola:** The J-Hive Concept is now very well advanced. We have just quite recently realised a completed System at our Paradis Innovation Centre in Milan. At the same time we are now beginning discussions with customers so we expect installations to be underway later in the year. J-Hive has generated significant interest as it meets a real need in the market. The market is moving towards individualised products and J-Hive is particularly well suited to these developments. It can be used in low production runs, niche models or as part of retouch lines and two-tone application. With the modular octagonal structure, and the choice of alternative pathways within the cell, it is possible to configure the J-Hive concept to suit a number of different manufacturing situations. One station can, for example, be used for preparatory purposes, measurement or quality control and can then feed several paint lines. The octagonal structure allows all sorts of possibilities and we look forward to working with our customers to help them achieve maximum benefit from their installation. Overall we see the whole J-Hive Concept as an exciting addition to our product range. It offers the potential for considerable savings both in terms of investment and operating costs alongside important quality gains for our customers. \*