Ingersoll Rand
Case Study Overview

Hood Lift Assist Device for Motor Vehicle Manufacturer

A US car manufacturing plant needed to be able to transfer hood components safely from a conveyor to a storage rack without causing product damage.

The hoods come off the conveyor at a 15 degree angle, and need to be tilted to a vertical position where the operator can place the hoods onto a storage rack, lined up with other hoods.

Depending on the positioning of the racks, the manufacturer required a way to pick up the hoods from the conveyor, tilt 15 degrees, and then set the hoods down from either sides of the hood. One of the manufacturer's primary concerns was that a traditional hoist or balancer would allow the hood to swing, potentially causing damage if it contacted another adjacent piece of machinery.

The Solution? Ingersoll Rand solved both problems by providing a vacuum lift assist consisting of a 3-handled control arm (one for each access side and one for pre-rotation for ultimate alignment control). The lift assist is mounted on a modified torque reaction arm powered by an air cylinder. The arm kept the hood in a vertical position as it was moved from the conveyor line to the storage rack, and gave the operator the precision control he needed to prevent damage to the part. The lift assist was suspended from an Ingersoll Rand aluminum bridge crane system.

Now, one operator can approach the conveyor, activate the vacuum controls, lift, tilt, rotate, and position the hood component onto the storage rack. With Ingersoll Rand's safety interlock system, the vacuum will not shut off while a hood component is present on the lift assist, ensuring operator and product safety since the part can not be dropped.

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