A bespoke paint finishing facility from Junair

Junair spraybooths, in collaboration with a major automotive tier 1 supplier of carbon composites, have designed, engineered and installed a complete paint finishing facility on their site in Hungary.

This new facility is a bespoke solution conceived and developed, in conjunction with the client, to ensure the overall end result met with demanding customer objectives and expectations.

A New Efficient Process Line

The aim of the project was to provide an integrated finishing facility incorporating a sophisticated material handling solution and high levels of automation with cutting edge technology to provide an efficient, high quality paint facility which delivers consistently high quality results. Challenges in the project included the very special and specific temperature and humidity requirements for the paints being applied, plus the clients extremely high yield objective, far in excess of industry norms. Not only have Junair delivered this but they have also managed to design the complete system to an aesthetically high standard, using clean white panelling, large viewing windows and excellent ambient lighting levels. The entire air handling plant was mezzanine mounted above the production facility to maximise space utilisation. The paint facility is the centrepiece of the client factory tour.

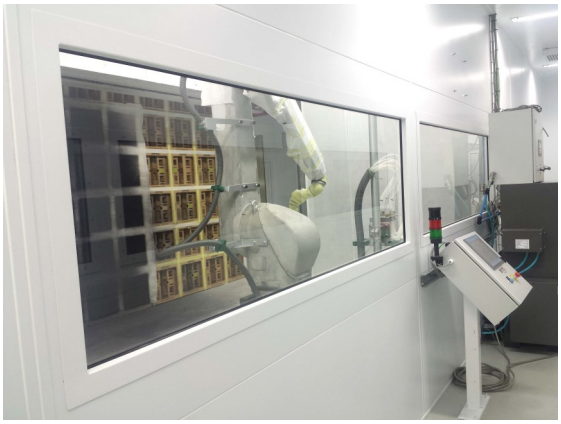
Power and Free Conveyor

This highly engineered process line utilises a sophisticated power and free conveyor, with a control system allowing paint details and product information to be tagged to each individual flight bar at the main operator load area. The process information is simply entered on to an HMI touch screen control panel which controls process routing and holds information such as product type, paint colour and process timings for each individual unit. All options are adjusted and controlled by means of the easy to use preprogramed recipe system which can handle up to 250 separate configurations.

The power and free conveyor allows individual units to pass through multiple loops of each stage of the paint process in order to achieve 1, 2 or 3 coats and then move on to separate flash off and cure zones, dependent on the preprogramed information on the flight bar.

Robotic Paint process

The paint is applied to the carbon composite unit by a 6 axis robot situated inside a dedicated paint spraybooth. The robot is fitted with a twin spray gun set up to allow separate paint systems to be used for different applications. The air temperature and humidity within the spraybooth is strictly controlled ensuring an even and consistent finish. The supply air is also chilled to reduce temperature and humidity when required.



Dry Filter Extraction

The spraybooth features an advanced dry filter extraction system utilising ultra-high capacity replaceable dry filters. These technologically advanced dry filters allow a reduction in filter change frequency from the industry standard of 3 to 4 days to an impressive 8 weeks due to the high holding capacity and free flow characteristics.

These high capacity filters achieve extremely steady airflow conditions within the spraybooth and provide an exceptionally stable pressure balance.

High efficiency bag filters have also been fitted to the extraction system in order to meet the stringent local environmental conditions.

Manual Spray Booth

A separate manual spray booth was integrated into the plant design to undertake any necessary on-line touch-ins and paint repairs whilst maintaining the same production conditions. The air temperature and humidity conditions of the manual spraybooth are engineered to exactly mirror those of the conveyorised booth in order to ensure maximum product consistency. Junair's Ultralux lighting has been designed to provide bright shadow free painting conditions.

Flash Off & Cure

The painted carbon composite units then move to one of two temperature and humidity controlled holding zones within the flash off area dependent on the HMI programmed flight bar.

Painted parts can then either loop back around the paint process, if a further coat is required, or enter a temperature controlled curing oven. The dwell time within the cure oven is preprogramed and is fully adjustable to suit the process required. A final cool down of the composite parts completes the cycle prior to parts being sent off to the quality control zone.

This sophisticated material handling process was designed to maximise the quality of the composite parts. Features such as a fully enclosed pre-cleaning booth and an anti-static deionising air knife were integrated into the design to ensure the best possible finish. A clean room corridor runs along the length of the facility, including air shower for controlled access, ensuring the process line is kept contaminant free.

Angus Trenholme, Technical Director. *"Our main objectives for the new paint finishing facility were to increase the efficiency and consistency of the finishing process. We initially won this contract as a result of our reputation for technical ability and experience in this area. I'm delighted with the results of the new process line, our in house design team were able to lean on their extensive experience to create a cutting edge facility that exceeded our customers' expectations."*

The turnkey project was designed in conjunction with the client's requirements, manufactured on site at the Junair factory and project managed to completion on site in Hungary.

For more information visit our website www.junair.co.uk, call our experienced team on 01706 363 555 or alternatively email sales@junair.co.uk.