

NORFI Solutions



Vehicles in start up areas, test stands and trim lines. Fully automated NORFI systems will ensure a clean air environment!

- *systems that do not require any manual operation*
- *extraction elements that "know" which type of vehicle they extract from*

The latest NORFI exhaust extraction systems combine our vast experience in exhaust extraction with state-of-the-art sensor and control technology. They can help you to increase the automation level on your production line, reducing costs and improving the work environment:

- sophisticated sensor technology identifies different vehicle models and moves the extraction elements automatically into the ideal extraction position
- modern control technology allows for complete integration into your production and process control system, with your specific requirements being considered and implemented
- ideal positioning of the extraction elements guarantees perfect extraction efficiency

Production line

1

For more than 30 years, NORFI has supplied the automotive industry with tailor-made exhaust extraction systems. With the latest technology, there are virtually no limits anymore regarding integration and automation.

NORFI in Production Lines

NORFI's engineers have developed solutions that are easily integrated into your production facility which removes the requirement for the workers to operate the extraction equipment.

For example, a contact-free exhaust extraction system can determine whether a vehicle is correctly located in the start position. The extraction units are then automatically placed behind the exhaust pipes and capture the exhaust gas. The extraction trolleys synchronously follow the vehicle moving at precisely the same speed. There is no mechanical connection to the vehicle. The system automatically varies the speed of the extraction trolley in line with the vehicle. At the end of the extraction track the extraction unit is automatically retracted and moves back to the start position via a separate return track.



Test Stands

3

A telescopic extraction trolley determines type and position of the arriving vehicle and drives autonomously into the ideal extraction position. When the test cycle is completed, the telescope is automatically retracted into its home position – no manual operation required!

Power Test Stands

4

Full load – that applies to the exhaust extraction as well! Large exhaust volumes and high temperatures are typical for power test stations. NORFI solutions will provide for clean air even under these tough conditions – fully automatic!

NORFI in Test Stands

During the process of producing a vehicle, several adjustment and test procedures need to be carried out. These activities require a high level of accuracy and skills. By taking care of all necessary routines related to the extraction of exhaust fumes, NORFI helps you to concentrate fully on the required work.

Whether extraction telescopes, floor extraction flaps, extraction arms, or any of the many other possibilities: The extraction device is always moved automatically into the ideal position at the vehicle, and exhaust fumes are extracted in the best possible way. No matter which vehicle currently is located in the test stand: A NORFI system identifies the type of vehicle and all subsequent processes are managed automatically.

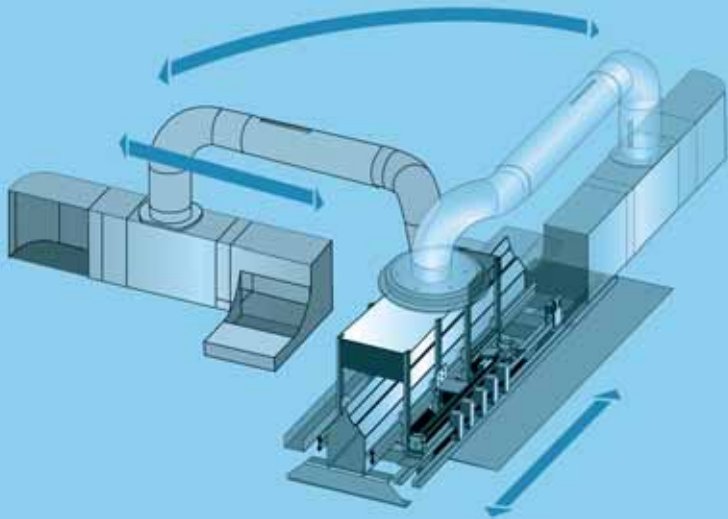
Cleaner Air - fully automatic!

NORFI in Power Testing Stations

Reliable exhaust extraction is essential for power testing. Exhaust temperatures of up to 500°C and large fume volumes pollute the operators' environment. Automatic NORFI-systems are the answer to these challenges: Our systems position themselves automatically behind the exhaust pipes and remove hazardous fumes safely from the test stand. The flexible control system allows the extraction system to be controlled independently or by the main test stand controller.

Systems are designed and materials selected specifically for the exacting test stand environment.

NORFI-systems - reliably integrated!



Floor-mounted Extractor

1

The floor-mounted extractor is an ideal solution e.g. for brake test stands and similar test stations. Fit for the integration into your control system, these extractors may also be used for different sizes and models of vehicles.



Underfloor Extractor

2

Be it for technical reasons or visual requirements: sometimes an extraction system shall not be mounted above ground. In such cases, the solution are systems that are installed in the ground and surface only when they are needed.

Floor-mounted Extractor

Reliable removal of exhaust gas is achieved by means of a swivelling extraction arm that is mounted at floor level beside the rear end of the test stand.

The extraction system is automatically initiated as the vehicle arrives on the test stand. This activation can either be achieved by a signal from the test stand control, or by using our vehicle-detection-system. There is no need for any handling by an operator. The extractor rotates to the optimum position behind the vehicle and exhaust gases are safely removed. At the end of the test cycle the extractor recovers to its home position and the test stand is ready for the next vehicle.

Completely flexible - completely automatic

Underfloor Extractor

When not in use, the extractors are stored in the ground. As soon as a car enters the test stand, sensors will detect its position and activate the extraction system. The extractors are extended out of the pit and start removing the exhaust gas.

When the vehicle leaves the test stand, the extractors are automatically lowered into the pit, and the lids are closed. The lids protect the extraction system and allow vehicles to move freely above it.

Automatic extraction - safe and reliable!

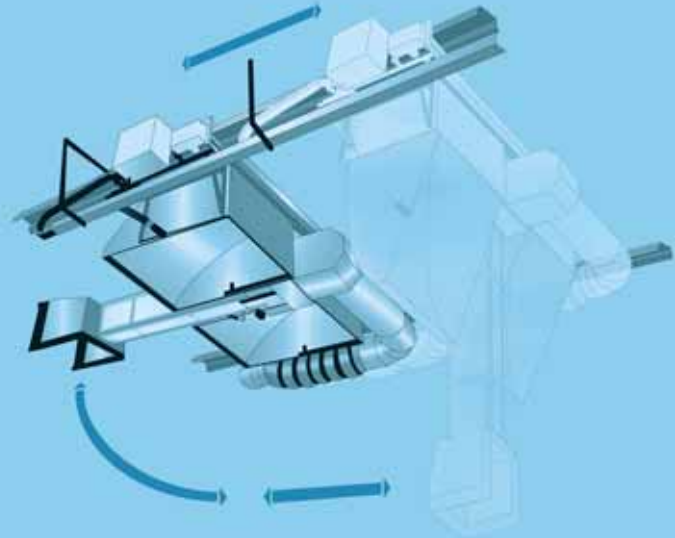




Synchronously driven Extraction Trolley

3

The contact-free extraction unit automatically detects the vehicle and will follow it synchronously - without being physically connected to it and without the need for a chain conveyor or similar means.



Test Stands for Trucks - Automatic Extraction of Exhaust Gas and Engine Fumes

4

The system adapts itself automatically to the vehicle type and its individual exhaust pipe version. The unique design avoids the risk of collisions.

Synchronously driven Extraction Trolley (contact-free)

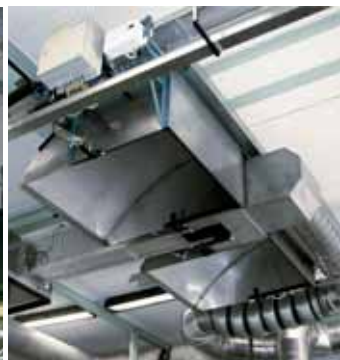
Once the sensors detect a vehicle, the extraction trolley will drive with maximum speed towards it until a defined distance is reached. With the vehicle starting to move, the trolley follows synchronously while keeping the pre-set distance and maintaining the speed of the car.

The telescope-trolley is equipped with a freely programmable synchronous control, including distance control and stepless speed control. An electric hose hoist unit and an extraction funnel for all types of vehicles add to the reliable functionality of the system, while collision-protection elements and fall-prevention measures assure the highest safety level.

Automatic Extraction of Exhaust Gas and Engine Fumes on Test Stands for Trucks

After driving the truck into the test stand, the driver chooses the truck type and the exhaust pipe version on the touch panel.

The automatic program starts: The support bars are lowered and the fan is started. NORFI's positioning-and-detection system is activated and moves the extraction portal towards the vehicle. The extraction hood corresponding to the pre-set exhaust pipe version is enabled and extraction begins. At the same time, the fumes from the engine are extracted. At the end of the test cycle, the extraction hood is automatically lifted and driven back to home position. The fan is switched off and the extraction system is ready for the next vehicle.



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Always a Step Ahead

NORFI stands for over 30 years of competency in extraction technology. NORFI has a wide range of manufactured products and is staffed by experienced specialists.

NORFI provides extraction technology for every source of exhaust gas: from lawn-mowers to cars and trucks, from special vehicles to locomotives, from standard applications to special solutions.

Our standard begins where others end.

Cars

Trucks



**NORFI's
Expertise**

Utility Vehicles

Motorcycles



Diesel-Locomotives

Special Applications,
Industry

