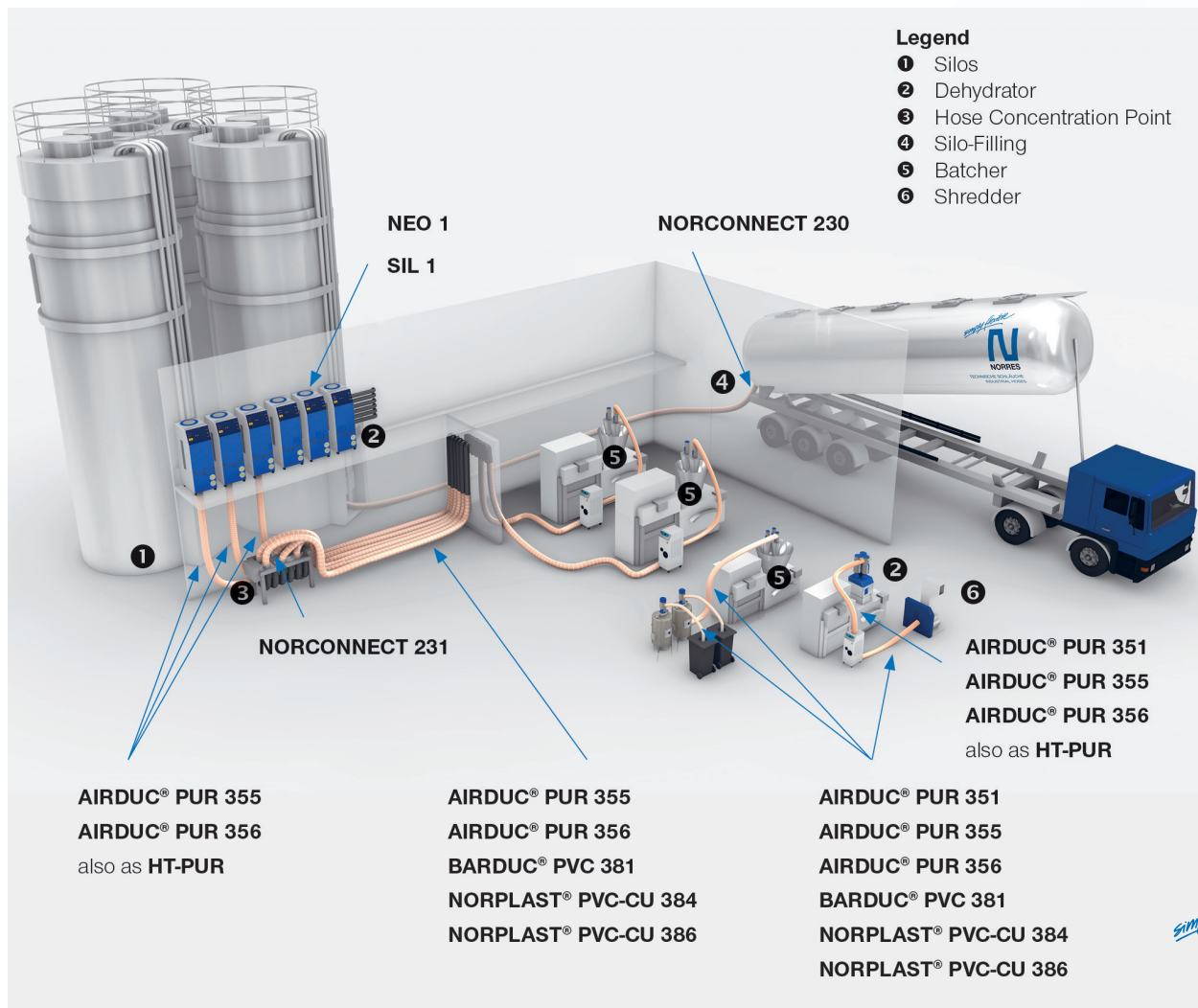


Multiple applications in the plastics industry

Careful choice of hoses saves energy and protects functionality



The prudent use of hoses is an important aspect of plastics production. The hose component of a machine is an integral element of the most diverse applications, without which the plastics processing industry would nowadays be inconceivable. Choosing the right hose is essential if each manufacturing step is to function efficiently. NORRES, the Gelsenkirchen based hose manufacturer, offers a broad range of products spanning all applications and supports its customers optimally in the search for the perfect hose.

A typical plastics processing plant, representative of many others all over the world, is shown here. The ubiquitous use

of hoses in all phases is instantly apparent – from the delivery of the raw materials through production to shipping.

Choosing and using the best hose or hose system for a particular application is vital to prevent the failure of a production facility and avoid economic damage that can easily amount to several thousand euros. In the worst case, a faulty hose or hose system can paralyse an entire application. Careful selection – and placement – of the hose system can thus have a crucial influence on the functionality of the plant as a whole. The transport path from the silo to the extruder is likely to have around two hundred interfaces. If the hoses are not fitted correctly, false air can enter at

any of these points. Providing the hose type is wisely selected and properly installed, energy savings should normally be achieved.

The initial step in any conventional plastics manufacturing plant is the arrival of the plastic pellets. These are delivered to the premises several times a week in silo trucks. The pellets (4) are transferred from the trucks to the silos (1) via hoses. The NORRES experts recommend choosing the AIRDUC® 356 hose for this purpose, clamped in the Safety Clamp System NORCONNECT 230, which is specially designed for thick-walled polyurethane spiral hoses that are used to load and unload silo vehicles. This system enables

polyurethane hoses, which are much lighter and more flexible, to take the place of rubber hoses, which are heavier, less flexible and far less resistant to abrasion. As soon as the plastic pellets **(4)** have been loaded into the appropriate silos **(1)**, various transport processes can begin.

First, the pellets are supplied to the piping in preparation for production. The **AIRDUC® PUR 355** and **AIRDUC® PUR 356**, clamped in the Safety Clamp System **NORCONNECT 231**, are excellently suited here.

In the next step, the plastic pellets are dried. They are pumped through the piping into the drying equipment **(2)** for this purpose. Once again, hoses play an important role – they control the air supply and heat the pellets.

NORRES offers a good alternative to NEO or silo hoses, namely HT-PUR. These types are particularly heat-resistant and they age much more slowly, even if the

temperature reaches 150 °C. The fact that the material shows a forty percent improvement in mechanical stability and very high resistance to abrasion during heat exposure is an immense advantage. The use here of the **AIRDUC® PUR 351**, **AIRDUC® PUR 355** and **AIRDUC® PUR 356** models is highly recommended by NORRES – specifically also as HT-PUR hoses.

The pellets then exit the dryer **(2)** via more hoses and are fed to the downstream piping for transport and distribution. The transparent version of the **AIRDUC® PUR 355** is just one of the hose systems advised for this step. It allows the process to be observed continuously, so that any errors in production are detected before it is too late.

The **BARDUC® PUR 381** and **NORPLAST® PVC-CU 384** are also ideal for this purpose. The pellets are subsequently transported onward through the piping to the hose stations **(3)**. The

hose stations are where other hoses distribute the product to the various production stations and processes – for instance to the dosing equipment **(5)**, the suction conveyors at the extruders or the injection moulding machines.

Hoses are also needed in the final processing step to pack the finished products: they help extrude and blister foils, suck away packaging waste and add small parts to the packages.

Since May 2009, explosion protection measures in Germany have been governed by TRBS 2153 – which also applies to the transport of plastic pellets, for example, if large amounts of dust are produced as a result of the conveying process or the plastic is transported in powder form. Compliance with TRBS 2153 is nearly always stipulated if the plastic is delivered in silo vehicles, because its sheer volume is assumed to inevitably lead to high dust levels.

## General statements contained in TRBS 2153 (formerly BGR 132):

A new section describing the pneumatic transport of combustible bulk materials has been incorporated. This section covers the situation where a potentially explosive atmosphere exists inside the hose. In such cases, the hose wall must be made of material that is either conductive or capable of electrostatic discharge (dissipative).

TRBS 2153 is not a directive but a technical rule. It is a legislative text.

**TRBS 2153 is an ownership based rule, in other words responsibility for ensuring compliance with this technical rule lies primarily with the owner.**