



CASE STUDY

**INNOVATIVE
TUBE CONNECTOR FOR
GLASS TUBE SYSTEMS**

**VARIOUS MATERIAL COMPONENTS
ENSURE FAST ASSEMBLY**



CLIENT'S PROFILE

Company:

Schott AG

Headquarters:

Mainz, Germany

Size:

16.500 employees,
5.900 in Germany

Year of foundation:

1884

Industry:

Glass manufacturing

Products:

Various products made of glass for architecture, automotive, energy & environment, industry, and more.

CHALLENGE

Safe and pressure-tight connecting element for glass tubes wanted

Modular pipe connection system for flexible applications

Quick assembly without electrical aids



SOLUTION

Joint development with the customer

Innovative combination of rubber and plastic parts

Special tool for easy assembly



RESULT

Considerable reduction of glass breakage saves costs

Higher working pressure on the pipe system possible

Component and tools from one source for smooth plant operation





CHALLENGE

JÄGER CONNECTS – PIPES AND IDEAS

The glass producer Schott AG is a supplier for operators of plants for microalgae cultivation. However, his search for a reliable connection of the glass tubes used in this process is proving difficult, as they have to meet extensive requirements.

In his function as development supplier, Jäger has from the very beginning provided all the capacities available throughout the group in the areas of product and material

development as well as toolmaking for this development cooperation. The cooperation between Jäger and Schott AG is characterized by the greatest transparency and openness, which is manifested in an absolutely innovative and yet simple product:

The Jäger pipe connector!

CHALLENGE



WANTED: EASILY MOUNTABLE CONNECTION SYSTEM

The cultivation of technical microalgae is becoming increasingly important in industry. Species such as spirulina and chlorella are cultivated under solar radiation by means of photosynthesis in several thousand metre long glass tube structures. The assembly and disassembly of the previously used pipe clamps was time-consuming and therefore costly for the customer.

First and foremost, the Jäger pipe clamps have to connect the glass pipes used in a pressure-tight manner, whereby attention must be paid to the flow properties of the

medium. In order to ensure smooth transport of the algae mass, only low flow resistance must be created at the connectors, as any unevenness within the system would cause turbulence.

The aim is to develop a modular and simultaneously scalable pipe connection system that can withstand the various stresses in use, such as reliable sealing, as well as the requirements of maintenance.

COMPREHENSIVE KNOWLEDGE OF MATERIAL LEADS TO INNOVATION

The experts at Jäger Gummi und Kunststoff GmbH are developing a combination of rubber and plastic parts that can be attached and detached using special tools without the need for electrical devices, while at the same time withstanding both the pressure that arises and UV radiation.

Three simple and simultaneously ingenious components make the difference:

1. External plastic rotating rings with circumferential profiling provide the necessary attachment surface for the corresponding special tool, a precisely fitting torque wrench.
2. The required compression of the sealing system is made possible by an inner sleeve with longitudinally running slots, as this contracts when the plastic ring is rotated.
3. Finally, the internal elastomer sealing body is injected onto the inner sleeve, so that a reliable seal can be provided.

The well-founded material development of the Jäger pipe connector enables both UV resistance and food-grade application. These properties are essential to allow the micro algae, which are also used as food and animal feed, to grow under intensive solar radiation.

Due to the material knowledge of Jäger Gummi und Kunststoff GmbH, an assembly of different components is created to achieve the set goal.



RESULT

QUICKLY SEALED INSTEAD OF QUICKLY BROKEN

A central aspect of more effective maintenance of the photo bioreactors is the simple assembly and disassembly of the individual parts. This is faster than with the metal clamp used up to then, which required an additional and time-consuming screw connection.

A recurring problem of the assembly with metal clamps arose from the necessity of a perfectly tuned torque, which had to act on the screw connection. If the force applied was too low, the

connection would not be reliably sealed, and if the contact pressure was too high, the pipes would be at risk of glass breakage. With the Jäger pipe connector, it was possible to reduce the glass breakage during installation without having to forego a permanent seal. The new connection achieves even more, because the now possible working pressure within the pipe system is up to 6 bar. Jäger thus ensures smooth and efficient operation of the systems.



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