

Arnitel HT: The new standard in high temperature flexible air ducts

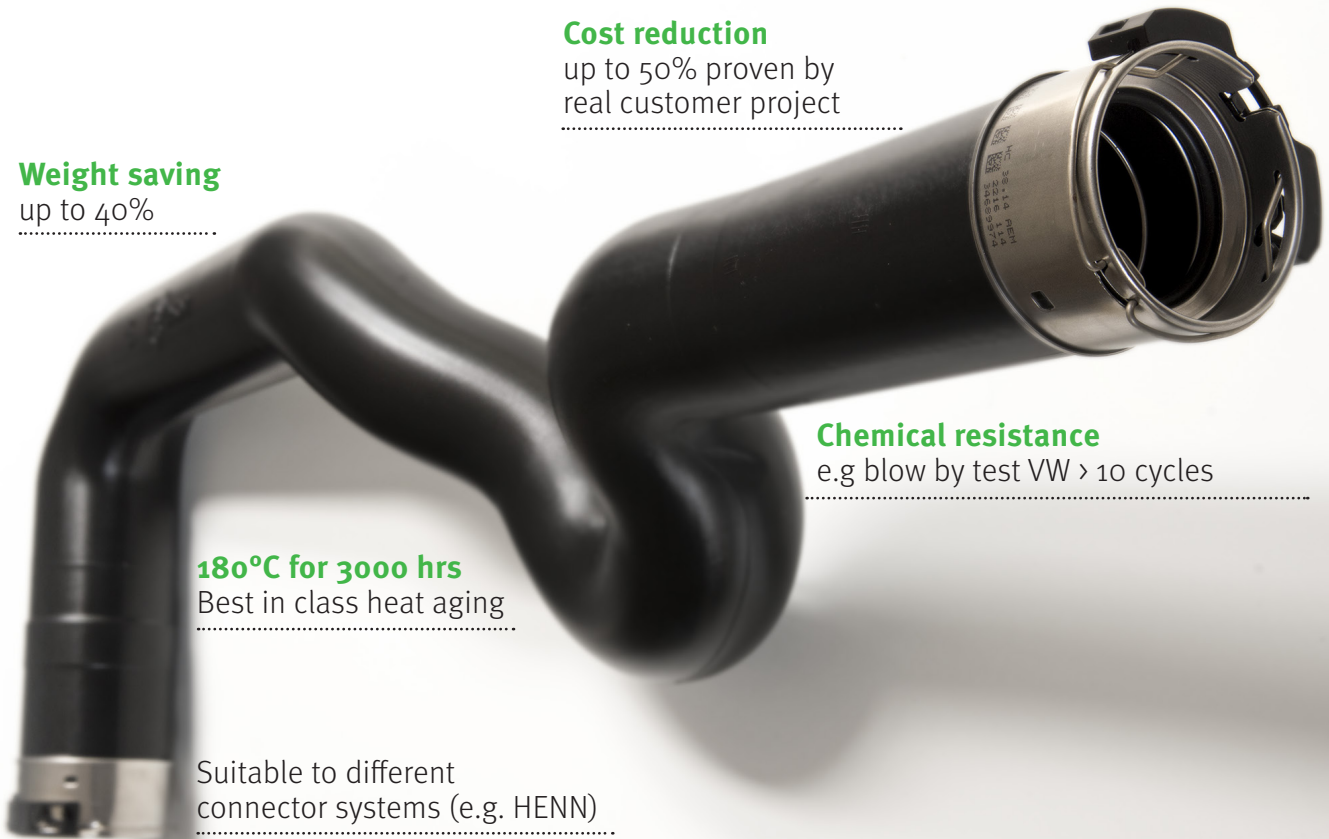
Weight saving
up to 40%

Cost reduction
up to 50% proven by
real customer project

Chemical resistance
e.g blow by test VW > 10 cycles

180°C for 3000 hrs
Best in class heat aging

Suitable to different
connector systems (e.g. HENN)



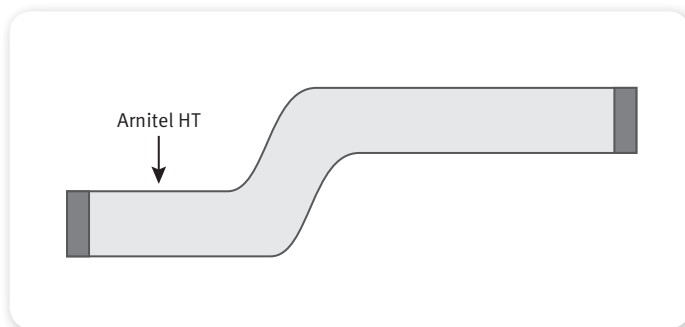
System benefits

Advantages vs. Standard TPCs:

- Extreme long term heat aging performance
- Unmatched chemical resistance

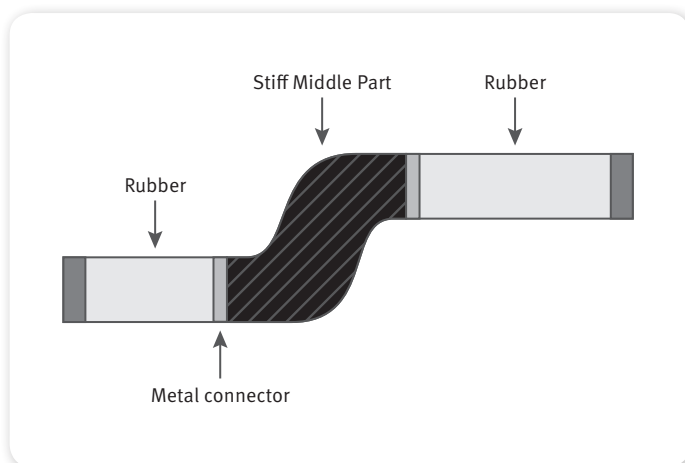
Means for the application:

- System cost advantage. Example two rubber ends 200mm and 400mm + PA66GF vs Arnitel HT leads to 34% system cost reduction
- Weight reduction up to 50%
- High temperature ducts can be now produced in a single material solution
- Less potential of leakage
- Faster and easier processing
- Less pressure loss



New solution with Arnitel HT:

- Single TPC solution
- Temperature range of Arnitel HT
- CUT (3000h) – 180°C
Peak – 190°C



Current solution:

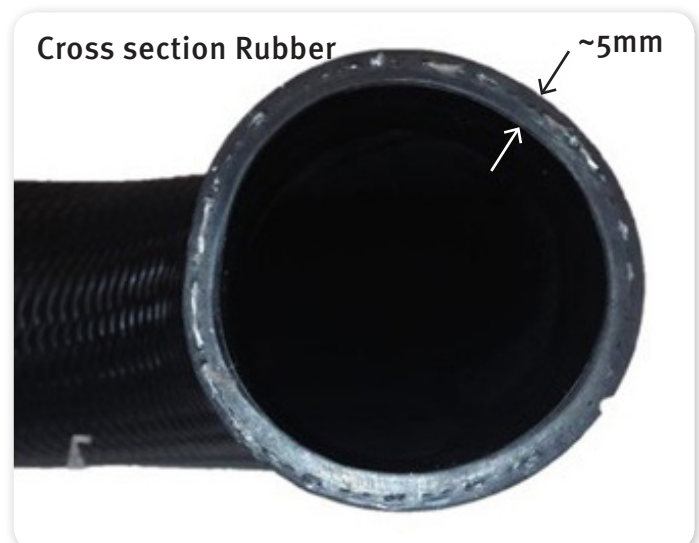
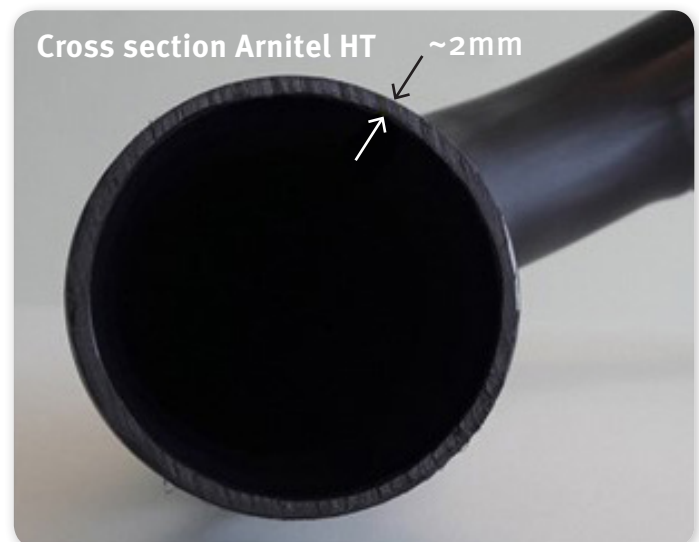
- Rubber – rigid PA – Rubber (AEM or ACM)
- Temperature range of AEM/ACM
- CUT (3000h) – 165-175°C
Peak – 190°C

Arnitel HT vs. Rubber

- Good flexibility and mechanics at low temperatures
- At high temperatures outperforming the rubbers which needs the mesh to be able to cover the needed performance at high temperatures
- From an environmental standpoint rubber production vs. TPCs recyclability and environmental effects during production needs to be considered

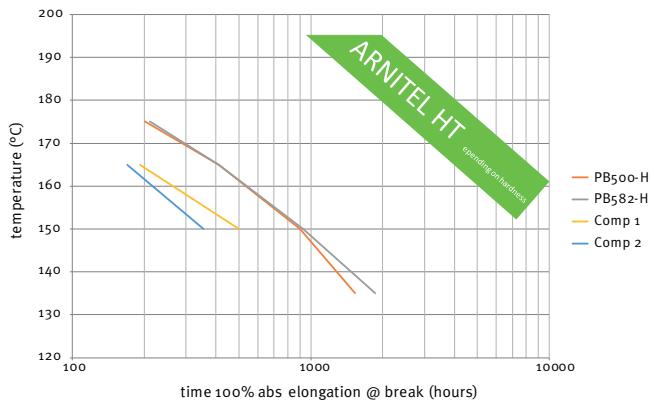
E-Modulus in N/mm ²	Rubber	Arnitel HT TPC
-30°C	2,300	2,460
23°C	15	480
160°C	19	72

Wall thickness comparison

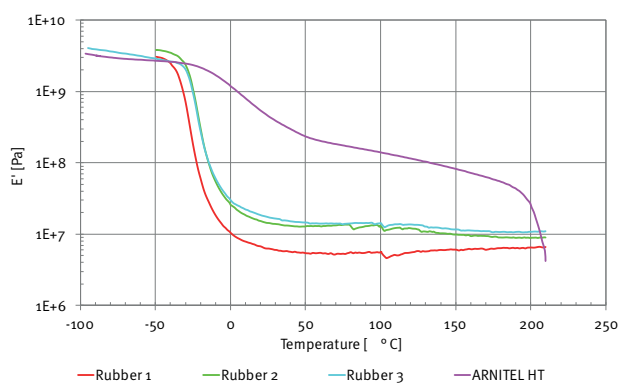


High performance under heat

- Comparing 100% Elongation retention after aging – Arnitel HT is setting a new standard by matching >180°C after 3000h aging
- Comparing with standard competition TPCs on the market they can only get 300-500h at max 150°C
- Arnitel PB500-H and PB582-H, our standard TPCs, are outperforming the competition

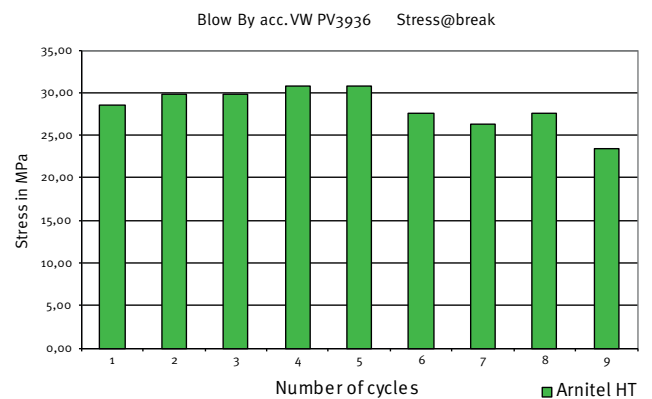
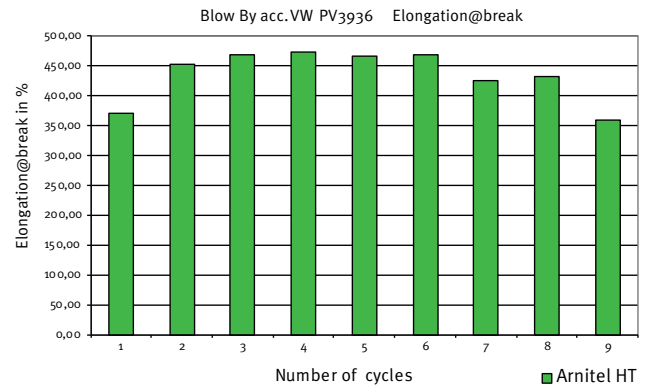


- Arnitel HT is able to keep a high mechanical performance over a big temperature range
- At -30°C the flexibility is similar to AEM and ACM rubber – which means high enough to cover the needed engine movements
- At high temperatures the high performance enables Arnitel HT to work with less wall thicknesses and still having higher mechanics vs. rubber



Chemical resistance of Arnitel HT

- EGR liquid
- Blow By
- Intensive cleaner
- Engine oil
- Road salts



The new heat standard

In the quest for maximum efficiency, engines are getting hotter. DSM, inventor of the Diablo technology, now invented Arnitel HT. This material raises the performance benchmark for temperature resistant TPC's. So you can start designing your one part solution for your next generation engine today.

- Improved heat aging
- Different Shore-D hardness
- Improved chemical resistance
- Flexibility to cover engine movements in a single part solution

The one part solution

Arnitel HT will allow system suppliers to produce the hot charge air ducts in a single material and using a single process step. "We can now make ducts that were not possible by the blow molding process in the past. For our customers Arnitel HT offers weight reduction, reduced risk of leakage and cost effectiveness" Urko Gurmendi of Cikautxo.

Proven performance in ducts

Arnitel is a proven solution for ducts.

• Hot charge air ducts:

Arnitel HT allows system suppliers to produce the ducts in a single material and using a single process step. Switching to Arnitel HT provides producers with a significant improvement in process efficiency and cost reductions of up to 50%.

• Clean air ducts:

Arnitel in clean air ducts offers reduced weight and wall thicknesses up to 50% compared to rubber, resulting in a significant cost advantage and an improved environmental profile. Its elongation after heat aging is four times better than other TPCs. This material retains the same stable stiffness at 180°C, while competitive materials reach this stiffness at temperatures up to only 110°C. Arnitel's higher stiffness can be used to reduce wall thickness, and therefore save weight, in some applications.

• Cold charge air ducts:

DSM offers Arnitel for cold charge air ducts with operating temperatures up to 150°C and high pressure loads. Traditionally designed in rigid plastic, stainless steel or aluminum combined with rubber end parts, cold charge air ducts made from these materials enable metal to plastic conversion using both blow molding and injection molding techniques. Using Arnitel is the one part solution, reducing weight and enable system suppliers to produce parts in a simplified way.

Meet the extreme

Do you want to learn more:

dsm.com/plastics

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