



## **UPDATE**

**P3 HAFEX – development and qualification of a halon-alternative 5BC cabin handheld fire extinguisher for commercial aircraft with 2BTP**

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## Challenge for Halon-1211 replacement 5BC fire extinguishers in cabin

### Main requirements for 1211 halon replacement in cabin:

- Zero or low ODP & Low GWP (2BTP: ODP 0.0028 / GWP 0.005)
- Achieve FAA Minimum Performance Standard (MPS): Hidden-Fire Test, UL 711 5B and 2B Cold Fire Test
- Replacement fire extinguisher fits in same envelope as Halon 1211 extinguisher



### Airbus specific requirements (extinguisher & bracket):

- Small max. space envelope of 350 x 125 x 95mm (13,78 x 4,92 x 3,74 in)
- Small max. weight of 2500g (5.5lb)

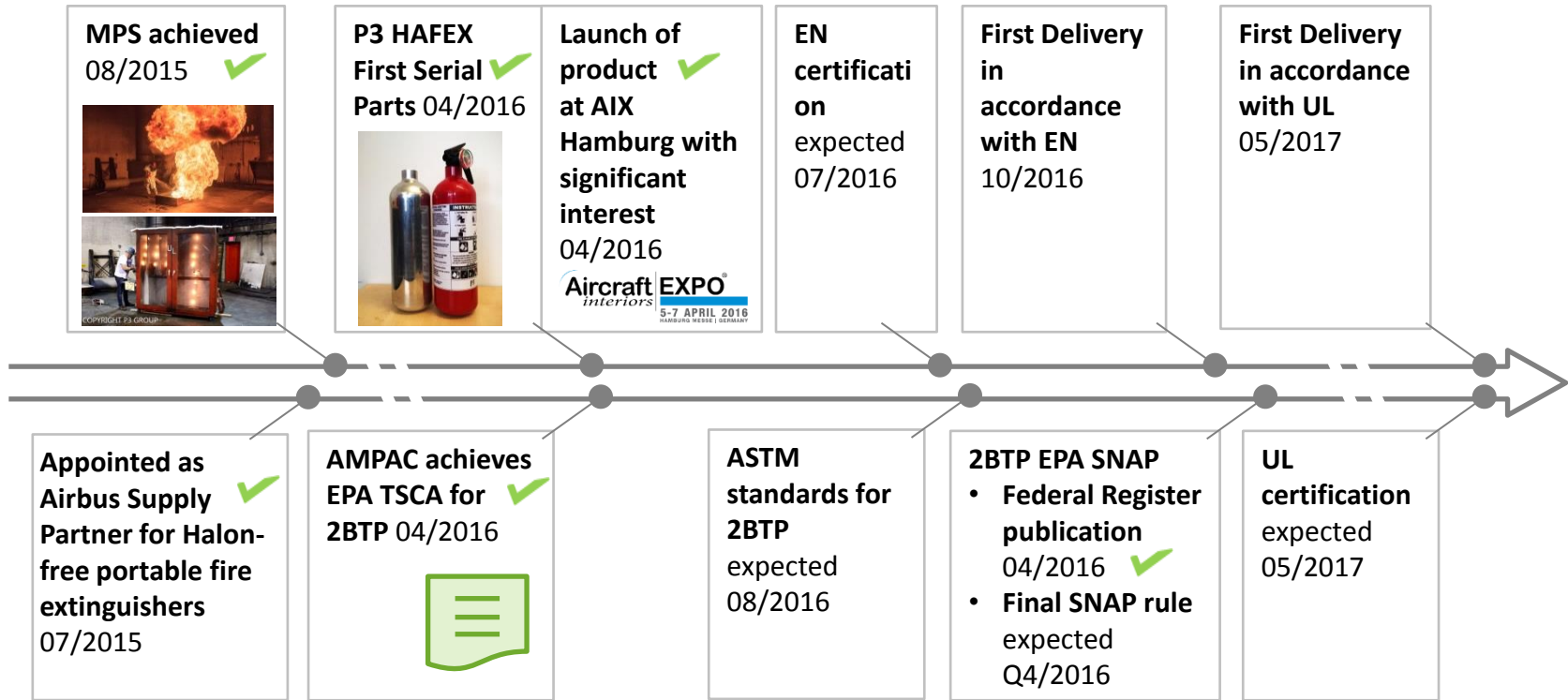
#### Our challenge:

- design has to achieve MPS with less 2BTP-filling and different filling ratio than current proven products with 2BTP
- development of smallest possible 5BC fire-extinguisher with 2BTP to allow highest drop-in rate in Airbus civil aircraft

→ P3 Group formed a cooperation with ANAF Group and Firemark Ltd. end of 2014 and started to develop the smallest & lightest possible 5BC fire-extinguisher with 2BTP, the P3 HAFEX.



## P3 HAFEX – Development Status

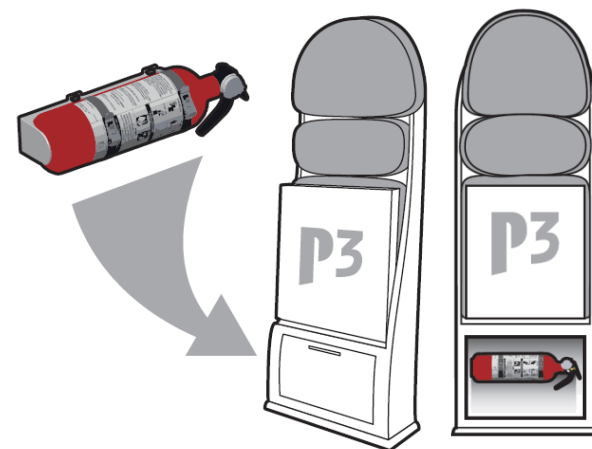


→ Both the fire extinguisher and the extinguishing agent are on track to achieve final approvals and certifications in accordance with the development schedule.

## P3 HAFEX – Summary

- We developed the **smallest and lightest** halon-alternative 5BC fire extinguisher with 2BTP (see table below).
- We **proved our design by achieving FAA MPS-qualification** in accordance with UL711 in August 2015 and produced **first serial parts** in April 2016.
- We were **chosen by Airbus** to deliver our P3 HAFEX for line fit and retrofit of all civil Airbus aircrafts, starting Q4 2016.

| Agent                      | UL 711 Rating | Total Weight (lb) | Dimensions (H x W x D)  | ODP           | GWP (100 year) |
|----------------------------|---------------|-------------------|-------------------------|---------------|----------------|
| Halon 1211*                | 5 BC          | 3.93              | 17 x 4.8 x 3.25         | 7.9           | 1890           |
| <b>2BTP (P3 HAFEX)</b>     | <b>5 BC</b>   | <b>4.66</b>       | <b>13.7 x 4.5 x 3.5</b> | <b>0.0028</b> | <b>0.005</b>   |
| 2BTP*                      | 5 BC          | 5.6               | 15.75 x 5 x 3.5         | 0.0028        | 0.005          |
| Halotron 1 (HCFC Blend B)* | 5 BC          | 9.3               | 15 x 5 x 4.25           | 0.01          | 77             |
| FE-36 (HFC-236fa)*         | 5 BC          | 9.5               | 15.9 x 8 x 4.5          | 0             | 9820           |
| FM-200 (HFC-227ea)*        | 5 BC          | 9.8               | 16.6 x 6.5 x 4.4        | 0             | 3580           |



\* Ref for all data in the table with grey background:

Presentation of Mike Madden during FAA Systems Meeting in Köln, Germany, May 11-12, 2011:

„Halon Replacement for Airplane Portable Fire Extinguishers - Progress Report“, File: Madden-0511-BTP.pdf

## Questions?

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