A geometric approach to Mathon maximal arcs.

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In 1969, Denniston gave a construction of maximal arcs of degree d in Desarguesian projective planes of even order q, for all d dividing q. In 2002 Mathon gave a construction method generalizing the one of Denniston. We will give a new geometric approach to these maximal arcs. This will allow us to count the number of non-isomorphic Mathon maximal arcs of degree 8 in $\mathsf{PG}(2, 2^h)$, $h \neq 7$ and prime. In $\mathsf{GF}(2^7)$ a new class of Mathon maximal arcs of degree 8 arises which admits a Singer group on the 7 conics of these arcs.