

Opening Remarks

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It is my pleasure to welcome you to ESTEC, and to this Spacecraft Charging Technology Conference.

This is the 7th Conference in this series and we warmly welcome the fact that ESA has the privilege of hosting the first one outside the USA.

The first conference was held in 1976 and was in response to the newly discovered problems on satellites resulting from the electrostatic discharges following spacecraft surface charging. Some of these were serious and for ESA and Europe a major electrostatic discharge on the Marecs-A maritime communications satellite in 1982 triggered a lot of work to understand what had happened and to improve the design of future spacecraft.

Since then satellites have continued to experience a variety of problems due to interactions with the charged particle environment. European examples include Meteosat, ECS and Olympus. Problems affect power systems, scientific payloads and more recently we have had to analyse carefully interactions between the plasma environment and new propulsion technologies, tethers, large power systems and so on.

During the past twenty years or so, the space engineering community worldwide has not managed to remove our susceptibility to environmentally induced effects. On the contrary, as our spacecraft have become more sophisticated, they have become more sensitive.

As head of the *Electrical Engineering* department at ESTEC, I am keenly aware of the many effects of the space environment, such as electrostatic charging, problems in power systems, communications' interference, effects on on-board control systems, problems with payloads, and so forth. We continue to strive to make sure our missions are able to do their ever-more-demanding jobs in the face of these potential problems.

Therefore we welcome the hard work and enthusiasm of this community in its efforts to understand these problems and to come up with solutions. We also welcome the great collaborative spirit which has been apparent in doing this.

ESA is particularly keen to ensure that the lessons which have been learned the hard way over the last two decades are not forgotten, only to be painfully re-learned. This was one of the main reasons we had the idea to make this first day of the conference a short course on spacecraft charging and related phenomena. We are very grateful to our co-sponsors CNES for their efforts in setting it all up.

On the subject of sponsors, we will hear from them all soon, but I would like very much to recognise and applaud the leadership, support and collaborative spirit of NASA, AFRL and our European partners CNES and DERA. They have all done a great job as you will find out over the course of this week.

I also commend the efforts of ESA's *Space Environments and Effects Analysis Section* and the ESTEC Conference Bureau in organising everything and giving the conference a particular flavour – “2001 A spacecraft Charging Odyssey”. Alain Hilgers and Eamonn Daly are to be especially singled out for thanks.

So in conclusion I wish you an enjoyable and fruitful week, and look forward to seeing the results of your efforts.