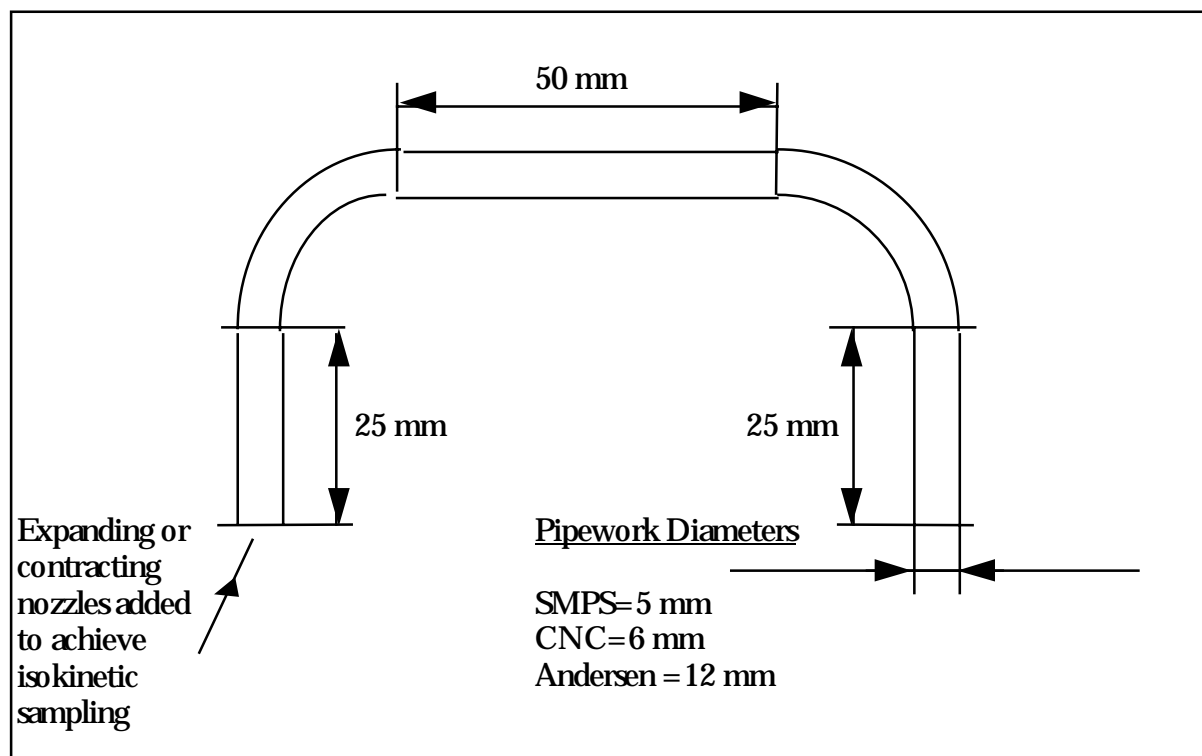


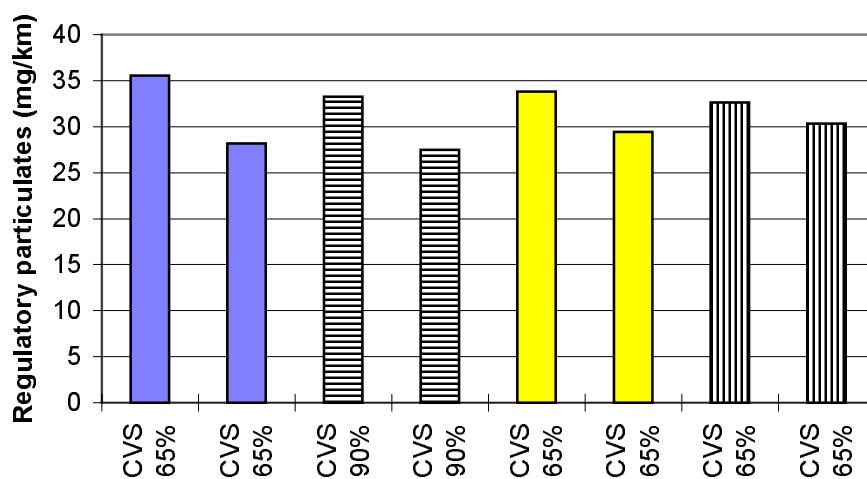
**Figure 1.**

**Sampling lines connected to particle measurement instruments.**



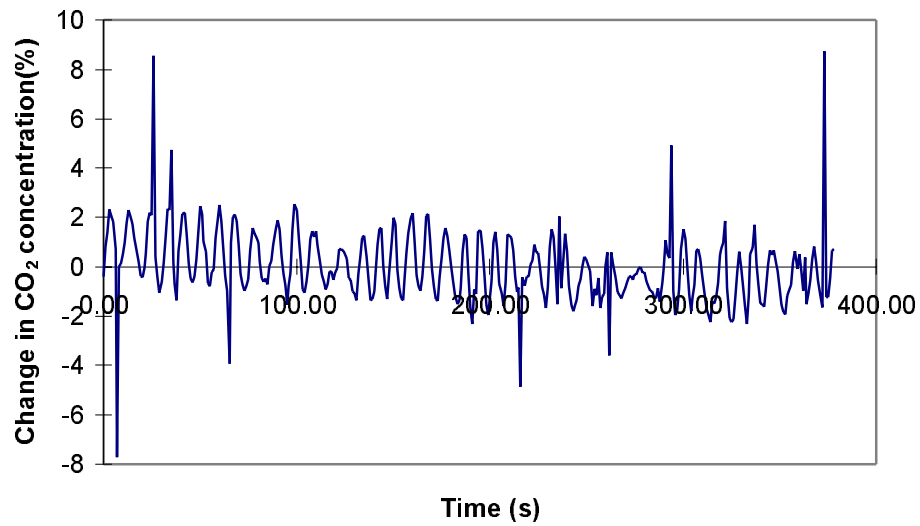
**Figure 2.**

**Variation in regulatory particulates at a steady state of 50kph for different sampling conditions**



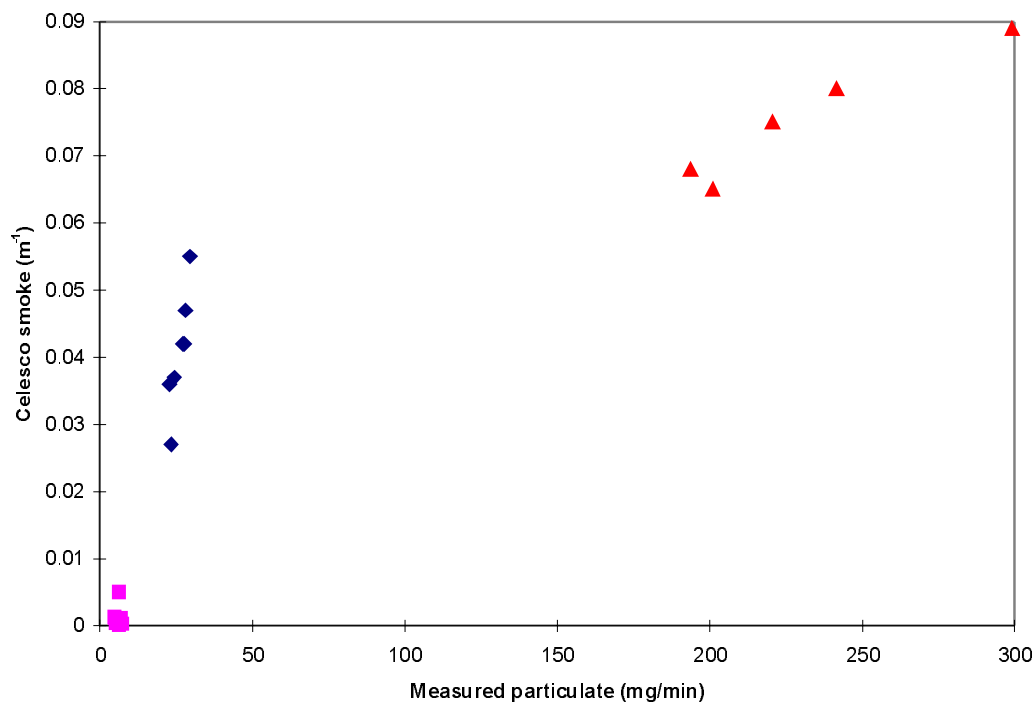
**Figure 3.**

**Percentage change in CO<sub>2</sub> concentration as a function of time  
at a steady state of 50kph**

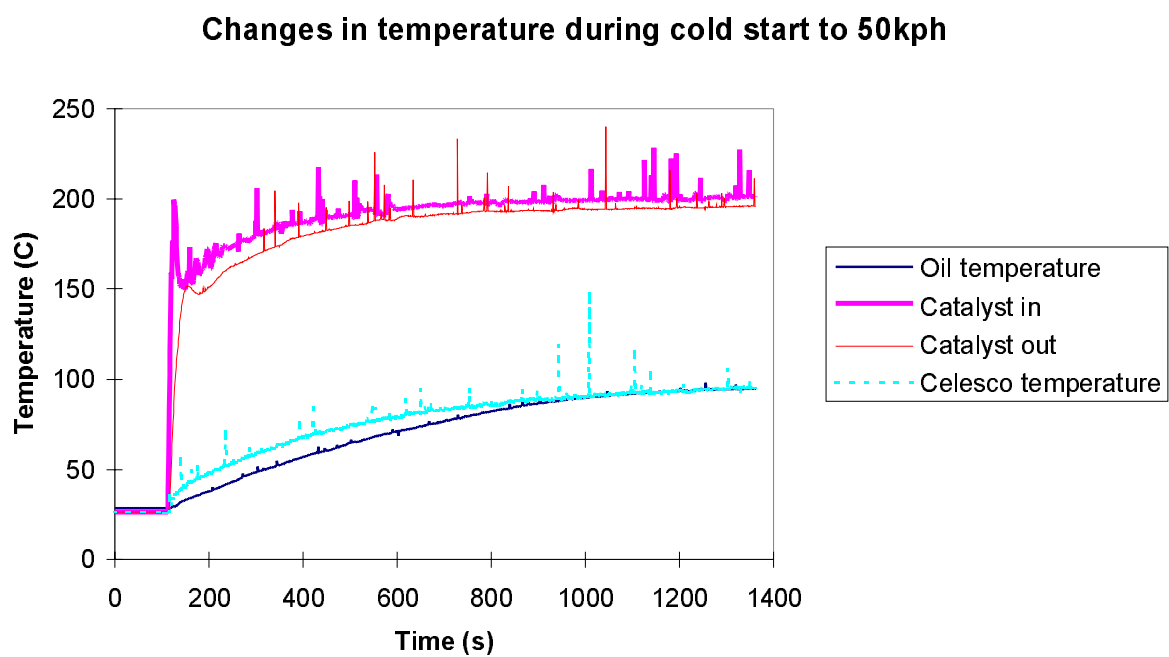


**Figure 4.**

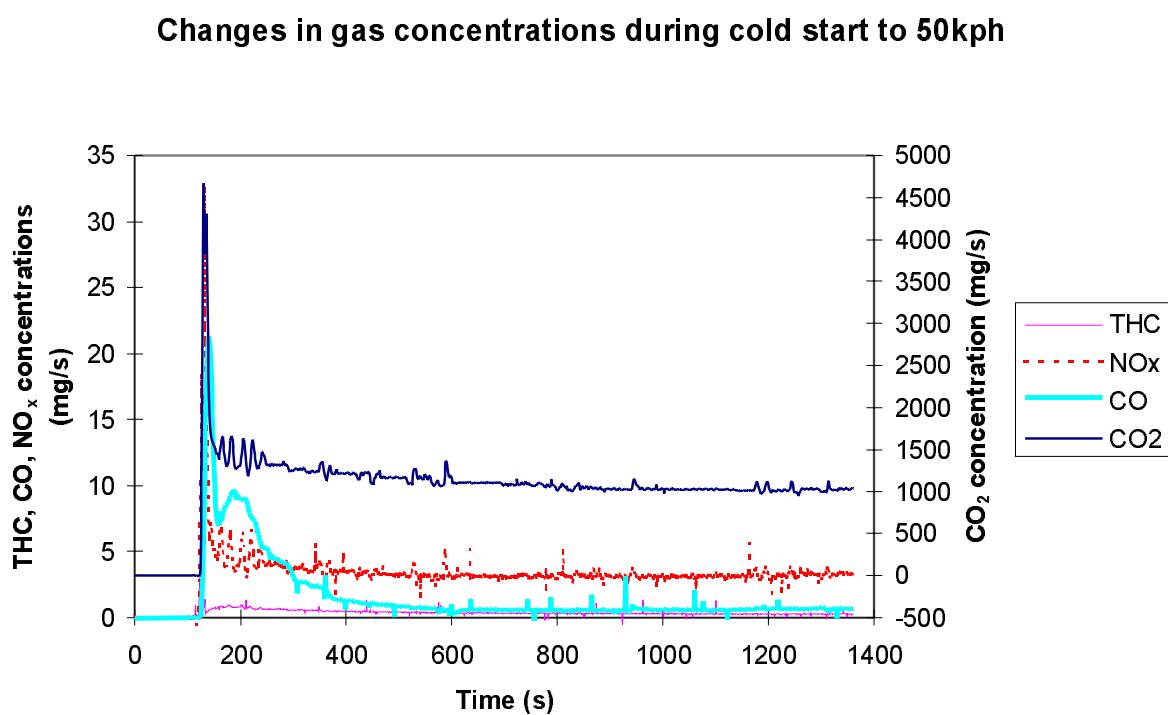
**Comparison of Celesco smoke meter against measured particulates for  
steady state conditions**



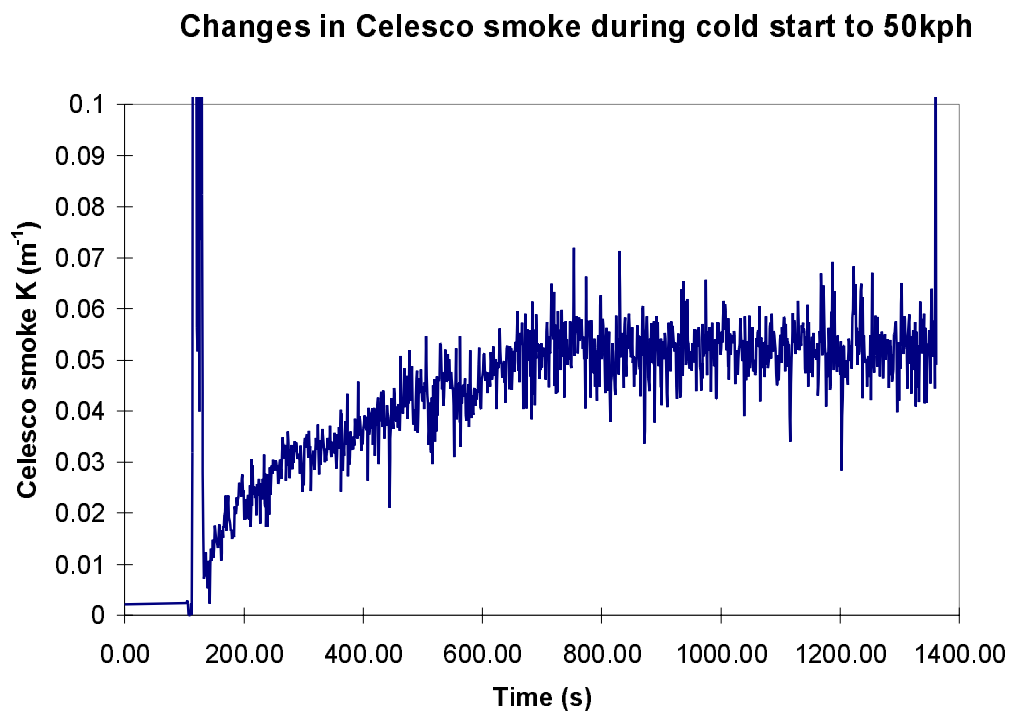
**Figure 5.**



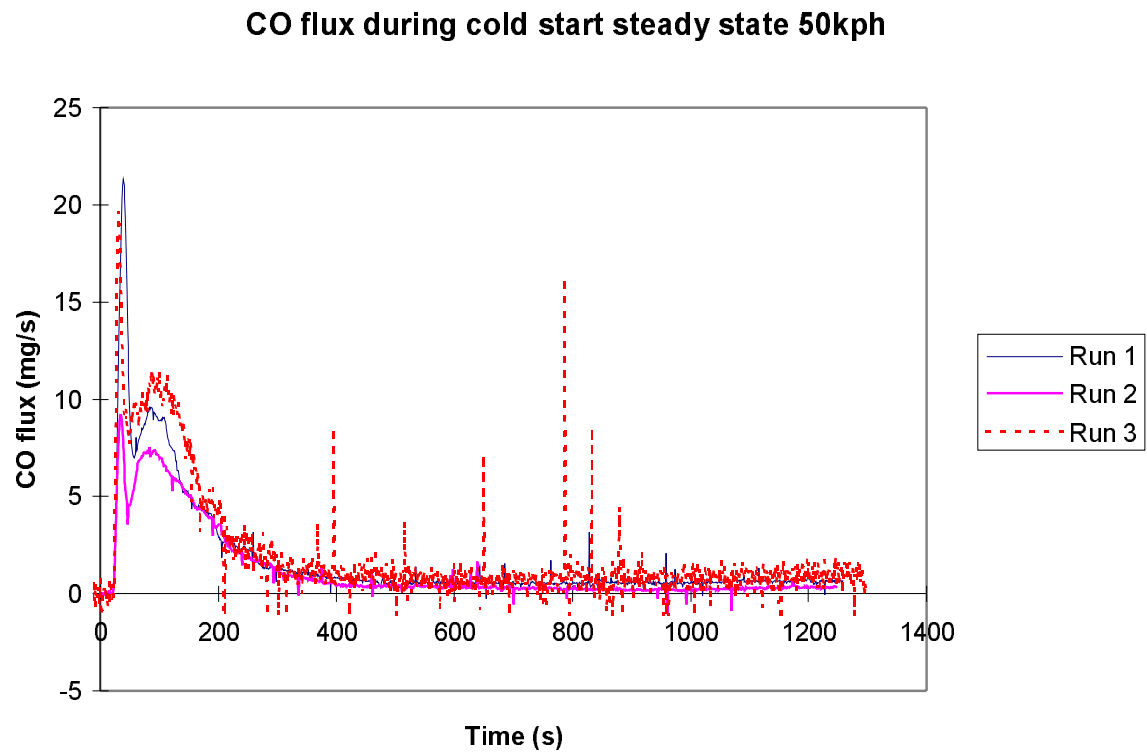
**Figure 6.**



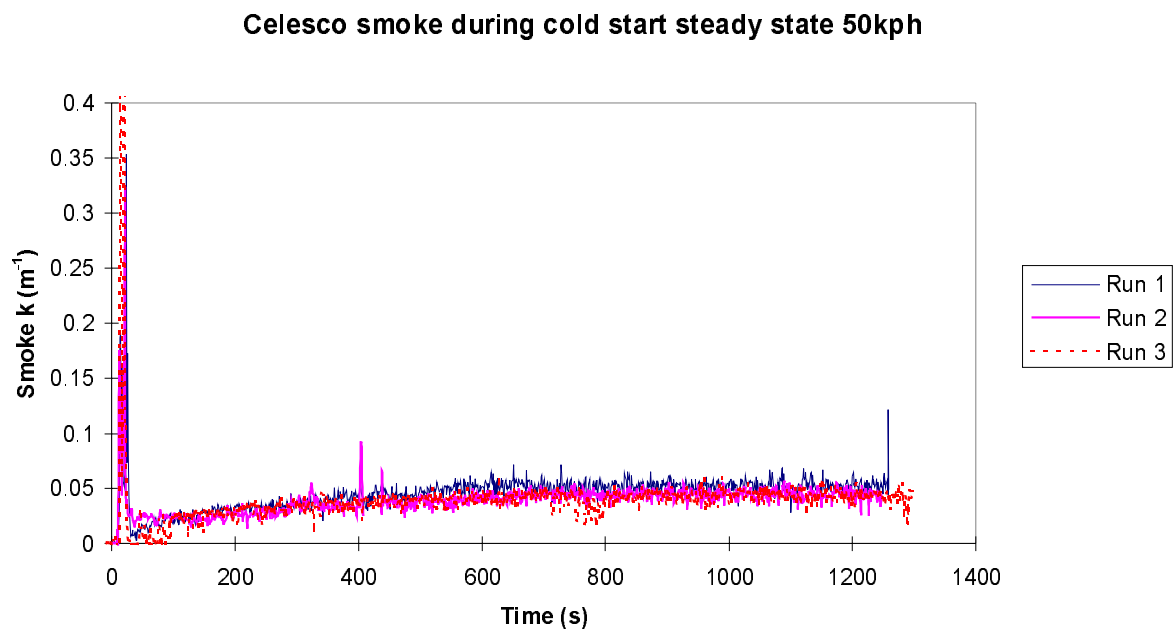
**Figure 7.**



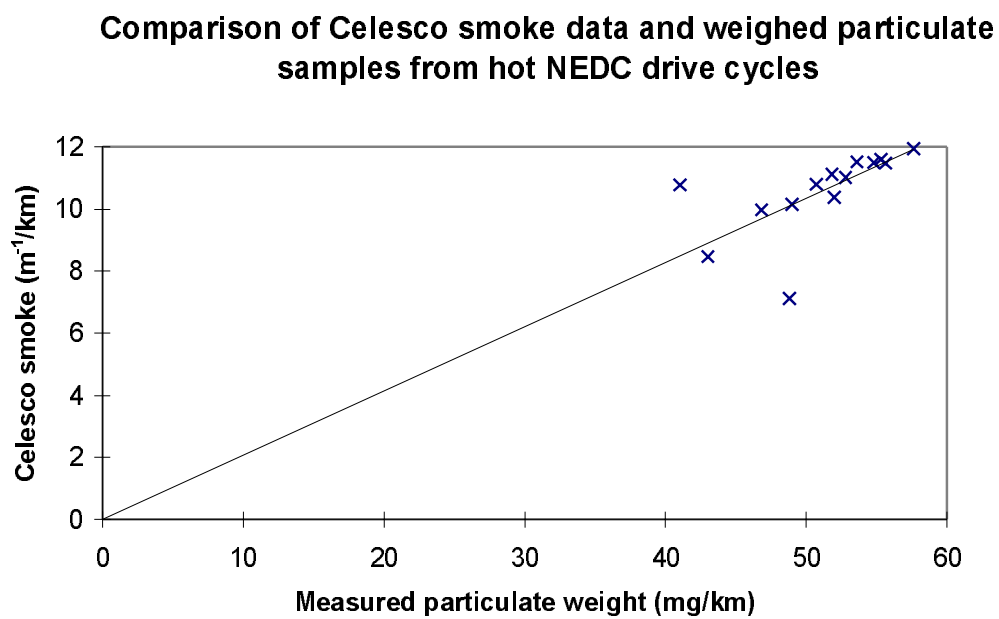
**Figure 8.**



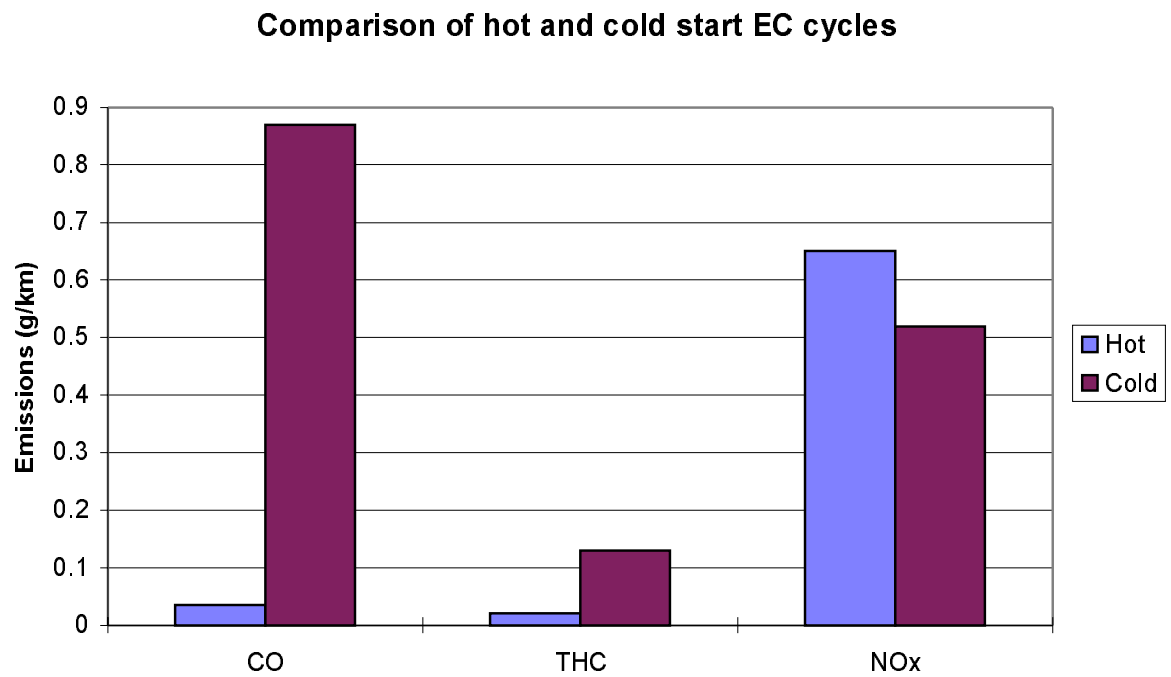
**Figure 9.**



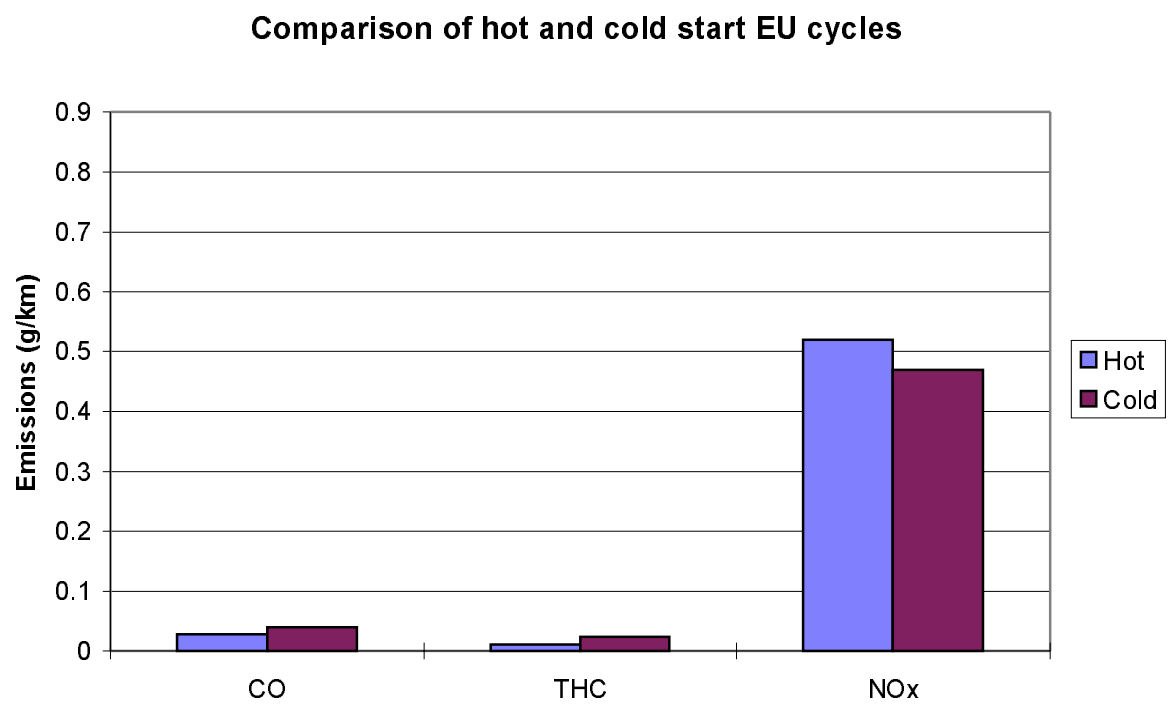
**Figure 10.**



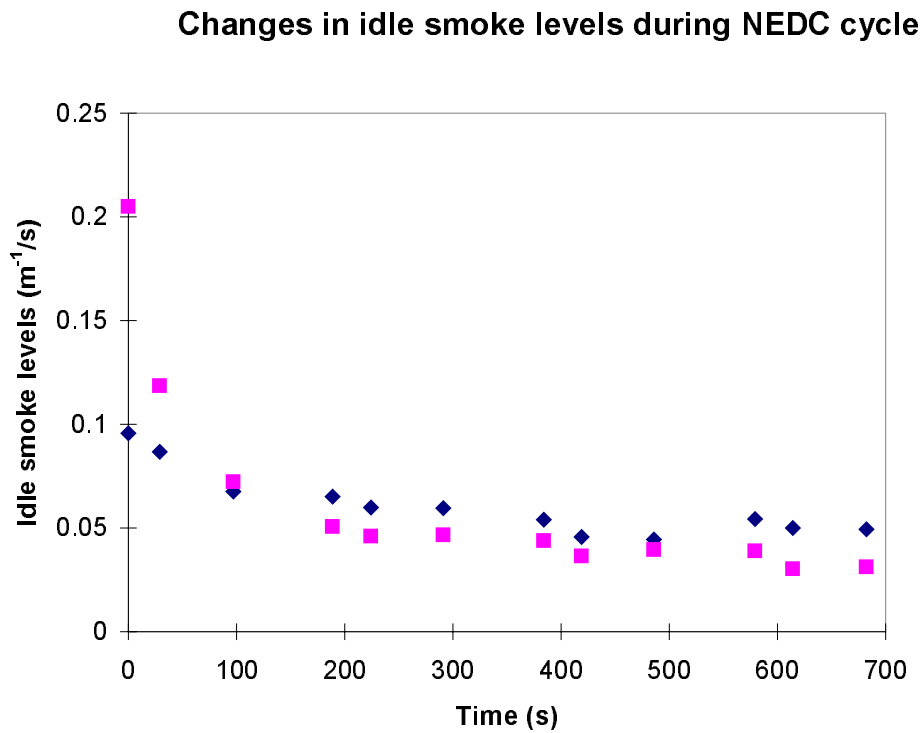
**Figure 11.**



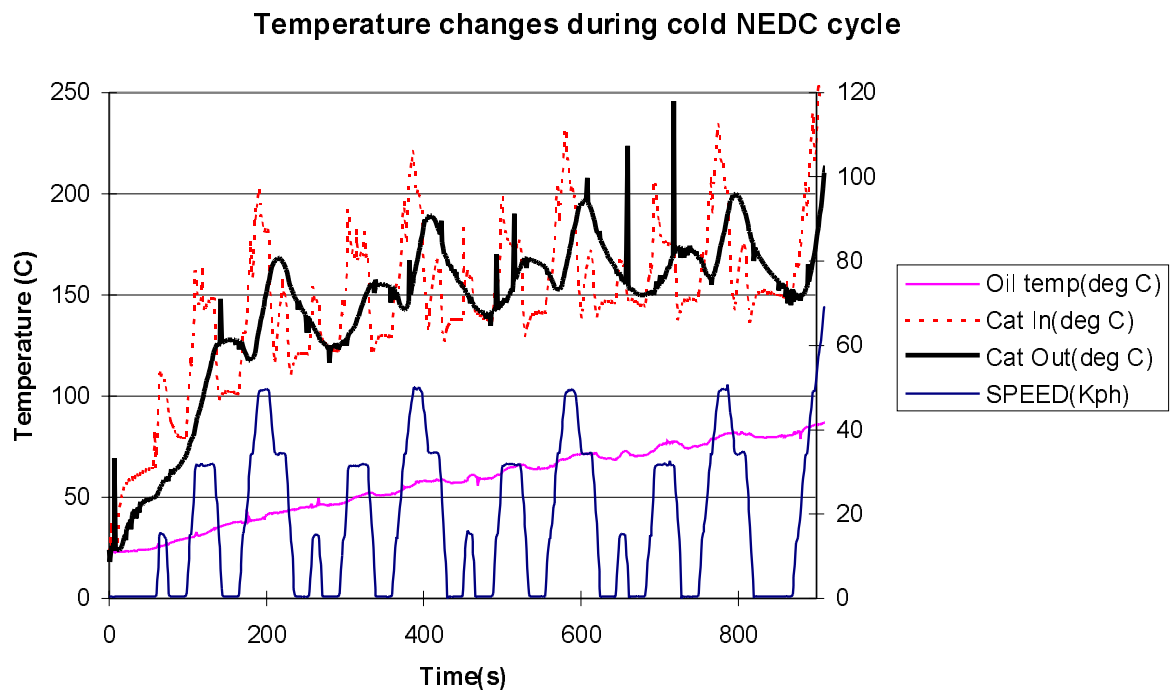
**Figure 12.**



**Figure 13.**

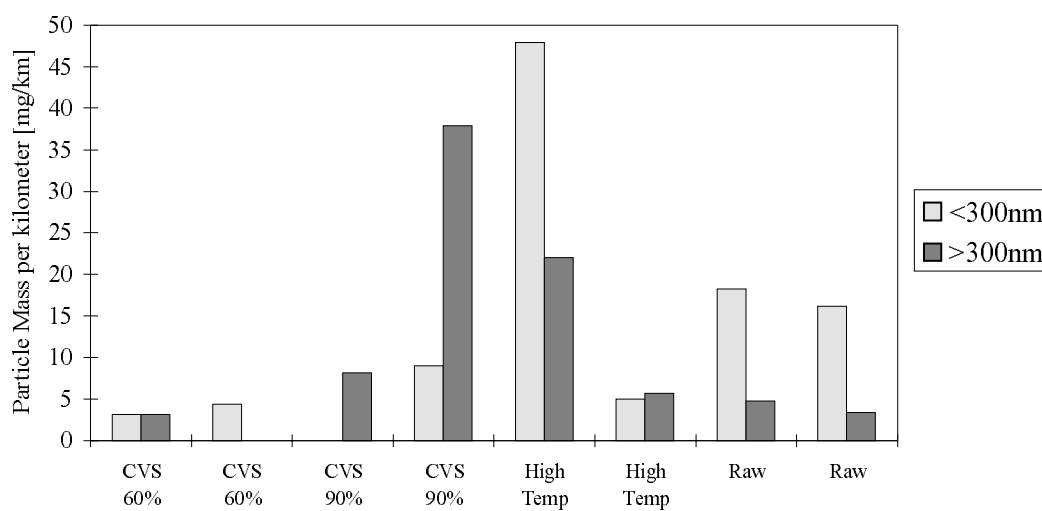


**Figure 14.**



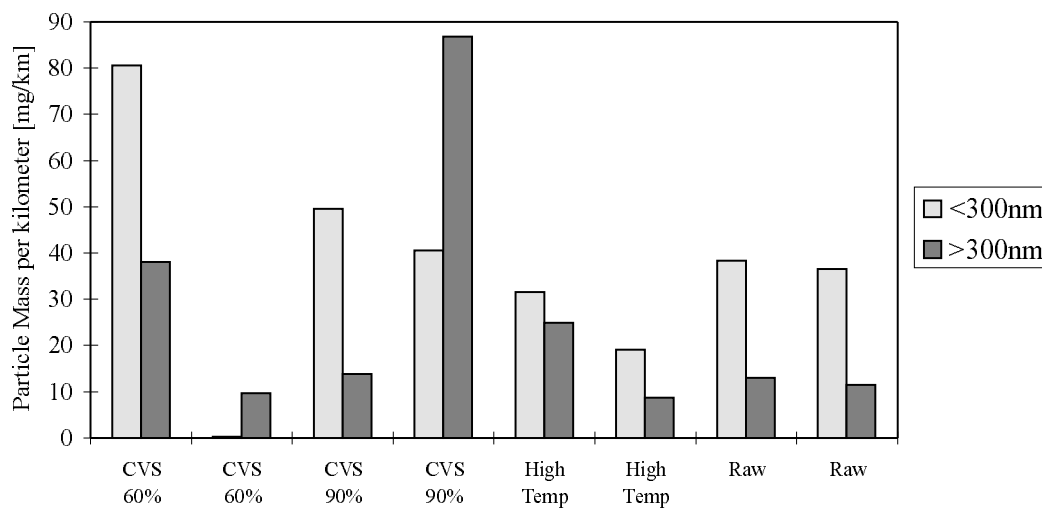
**Figure 15.**

**Andersen mass data at 50kph steady state**



**Figure 16.**

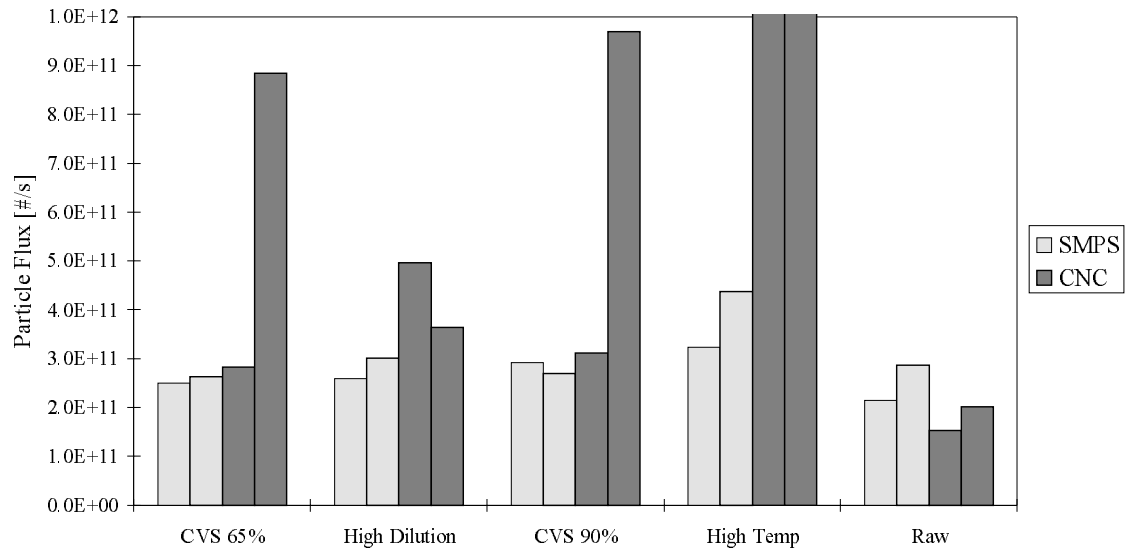
**Andersen mass data at 120kph steady state**





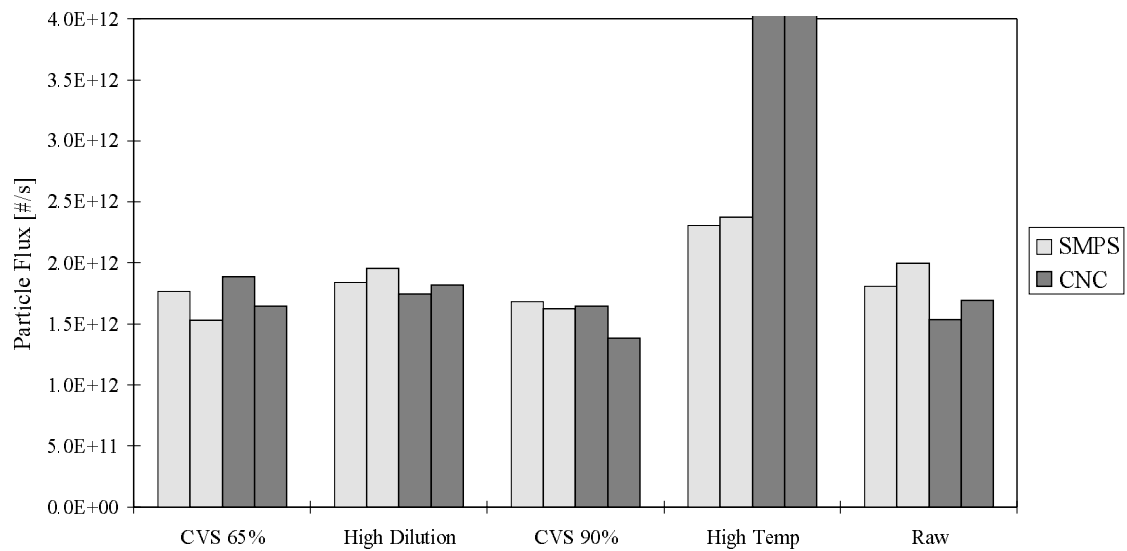
**Figure 17.**

**Particle flux data at idle**

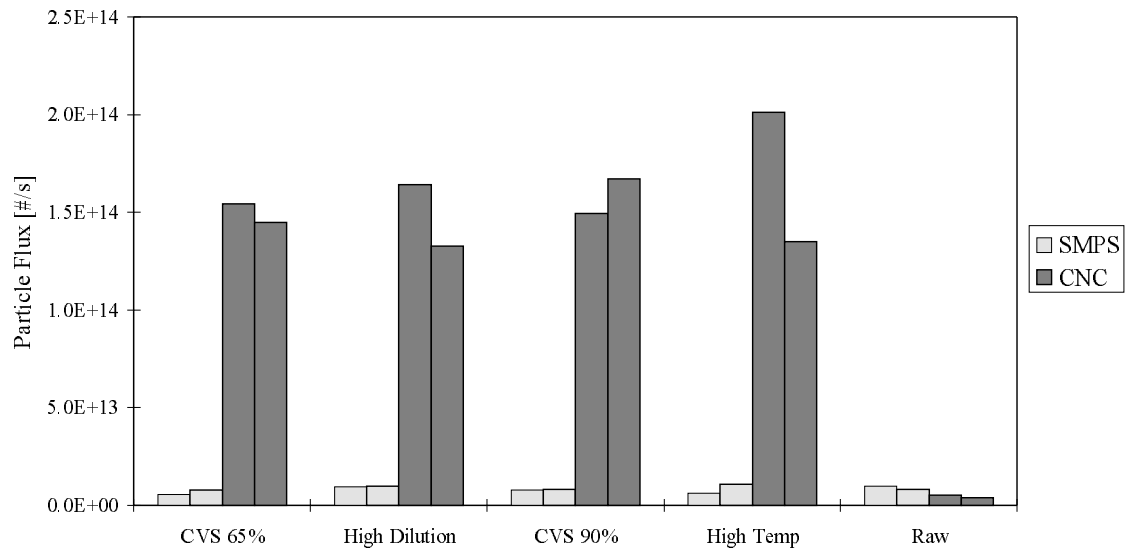


**Figure 18.**

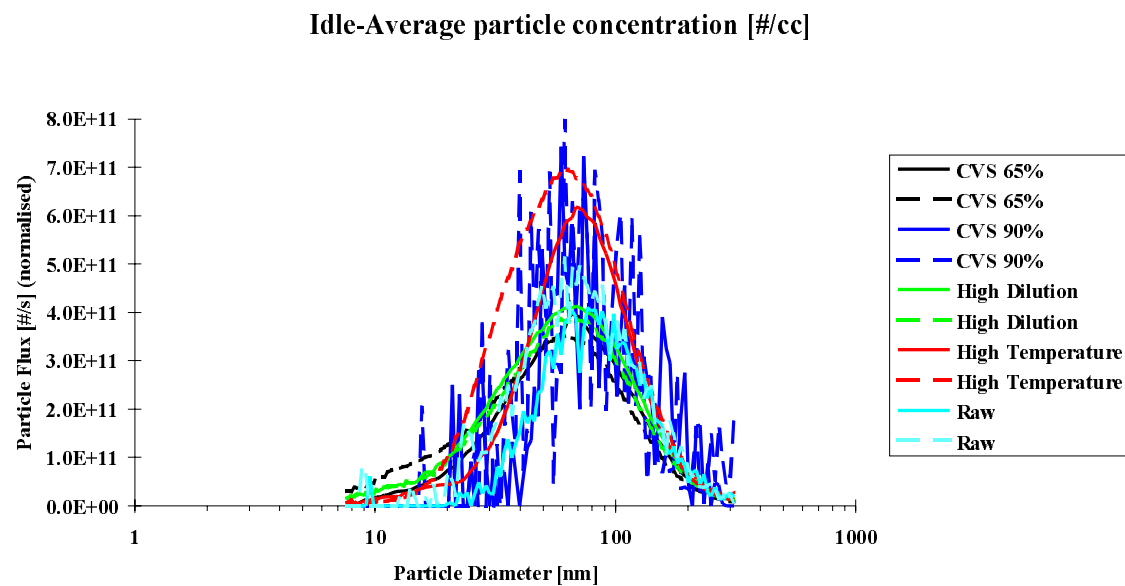
**Particle flux data at 50kph**



**Figure 19.**  
**Particle flux data at 120kph**

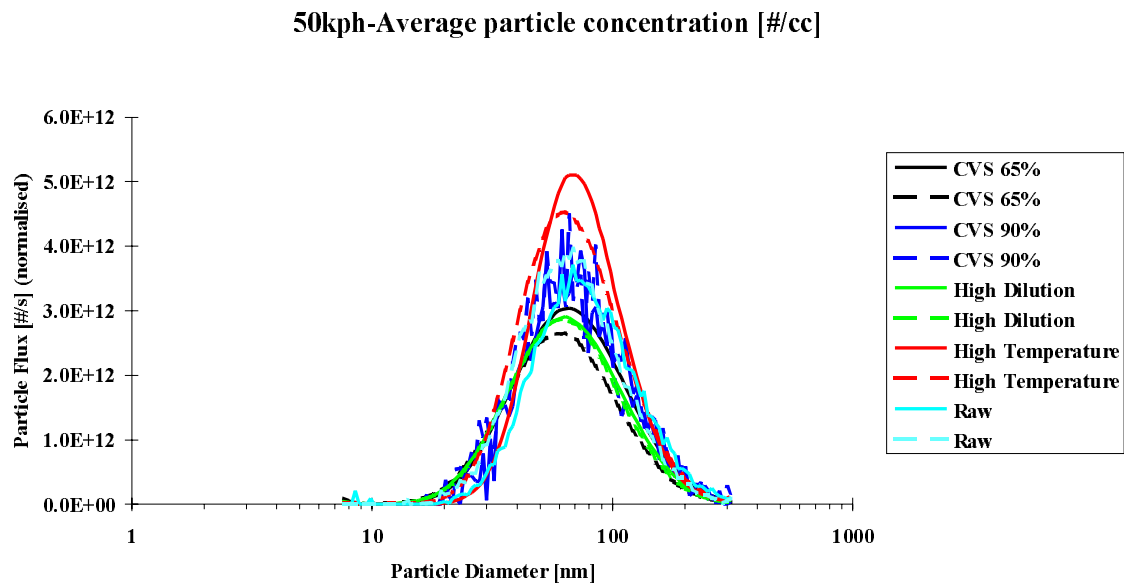


**Figure 20.**  
**SMPS size distributions at idle**



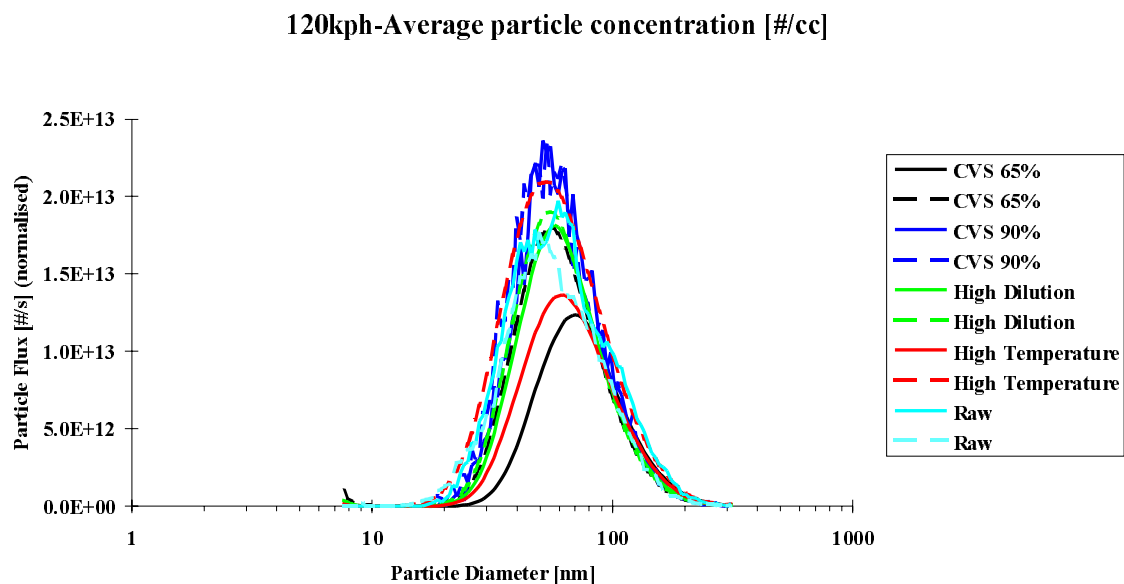
**Figure 21.**

**SMPS size distributions at 50kph**



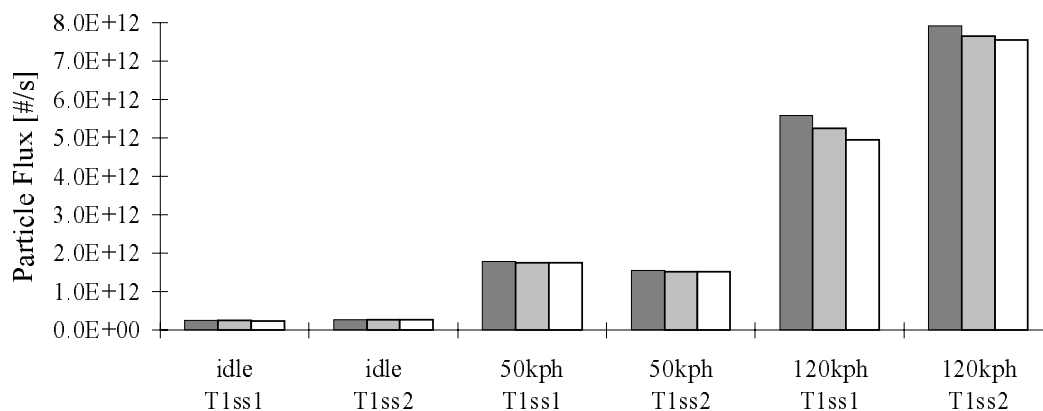
**Figure 22.**

**SMPS size distributions at 120kph**



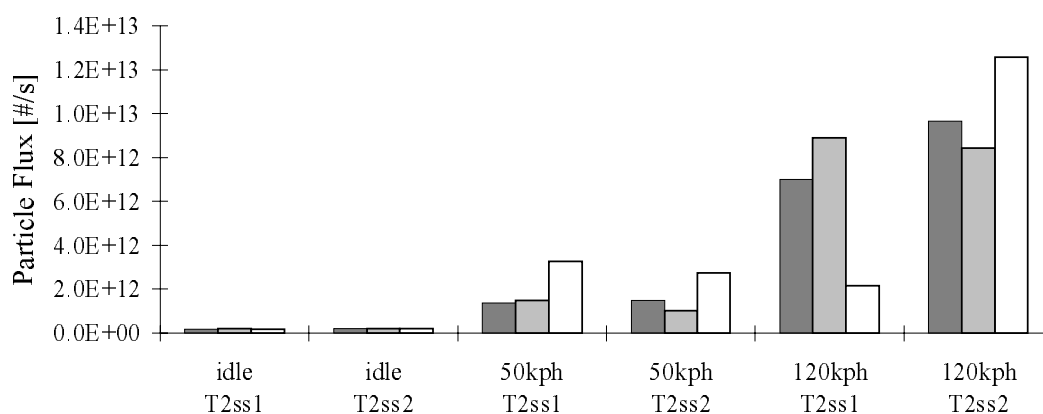
**Figure 23.**

**SMPS particle fluxes for CVS 65%, three separate runs.**



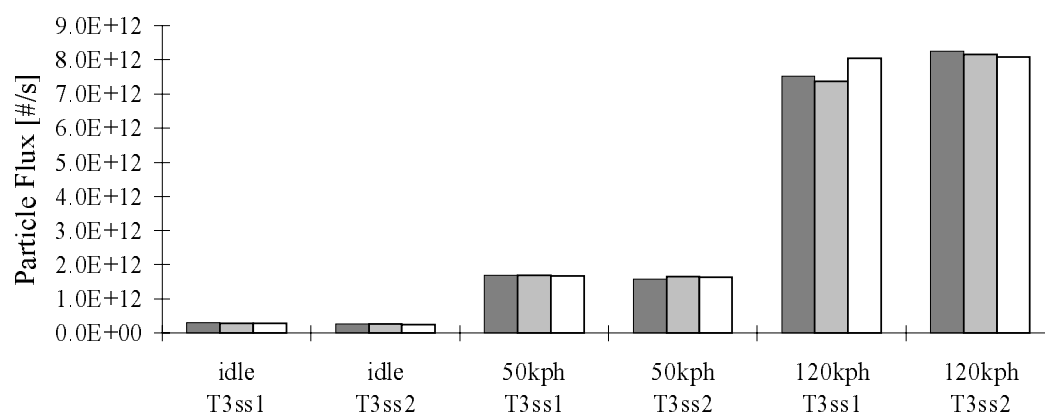
**Figure 24.**

**SMPS particle fluxes for high dilution sampling, three separate runs.**



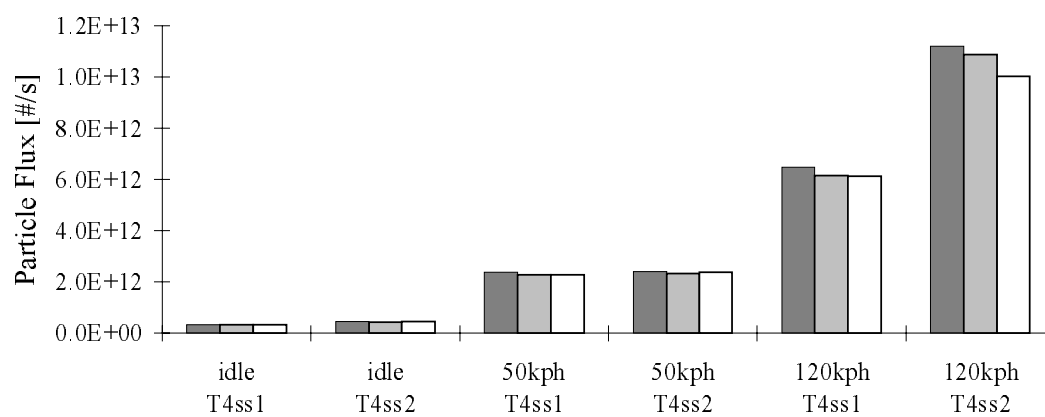
**Figure 25.**

**SMPS particle fluxes for CVS 95%, three separate runs.**



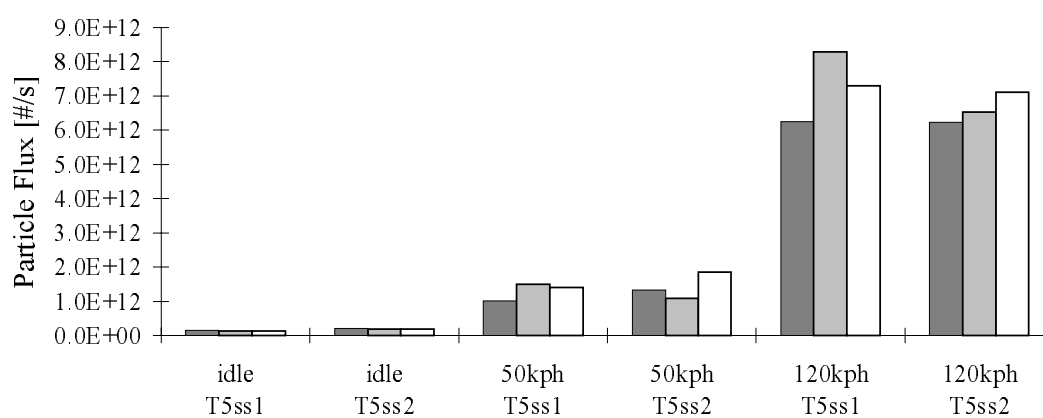
**Figure 26.**

**SMPS particle fluxes for high temperature sampling, three separate runs.**



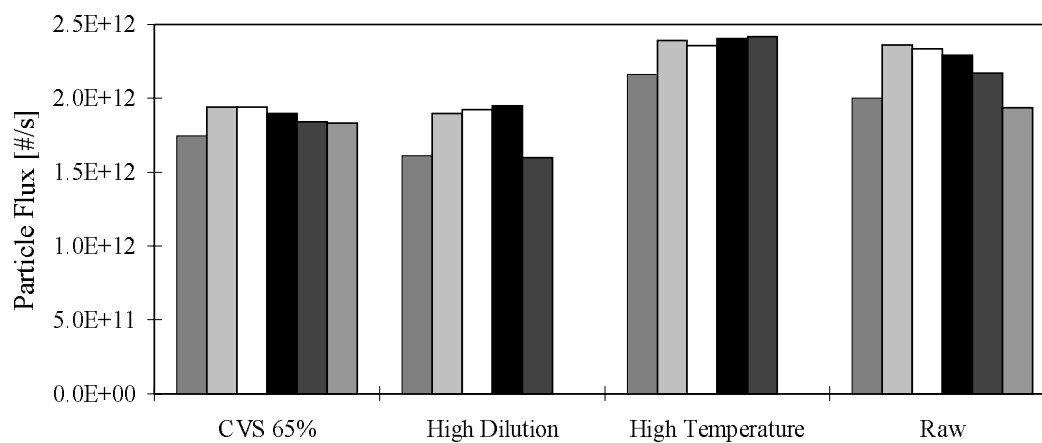
**Figure 27.**

**SMPS particle fluxes for raw exhaust sampling, three separate runs.**



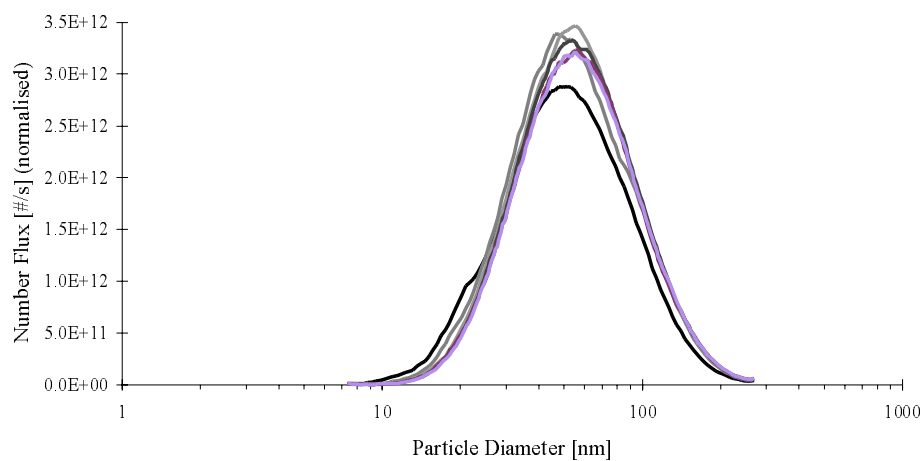
**Figure 28.**

**Sequential measurements of particle fluxes during cold start steady state 50kph tests at different sampling conditions**



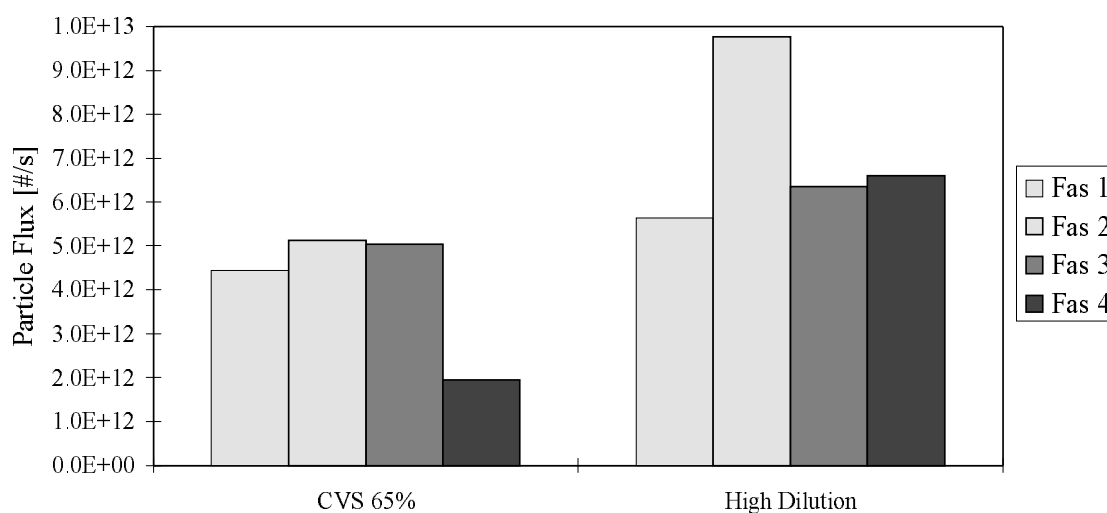
**Figure 29.**

**Sequential SMPS size distributions from a cold start steady state 50kph test**



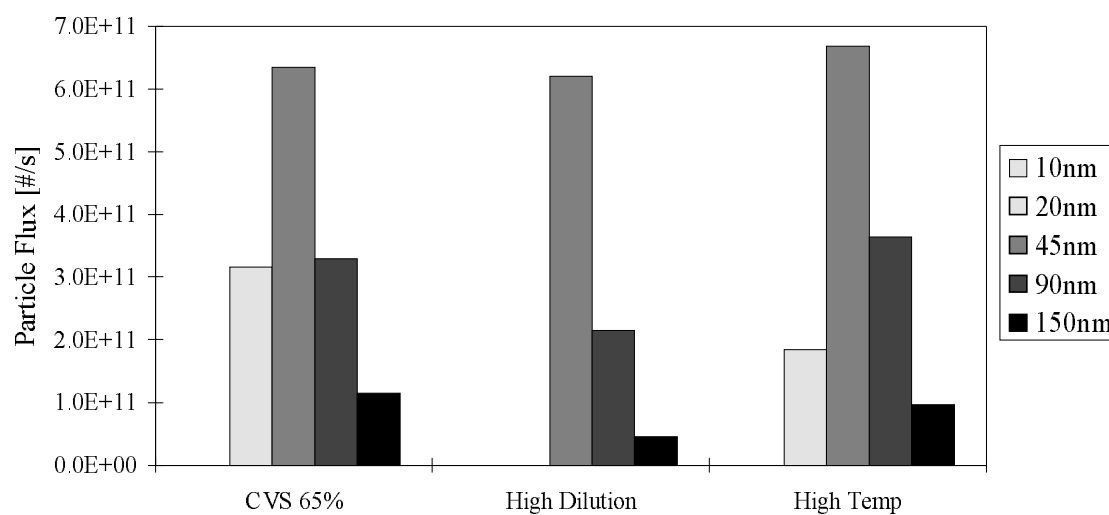
**Figure 30.**

**Particles per second over FAS drive cycle using CNC**



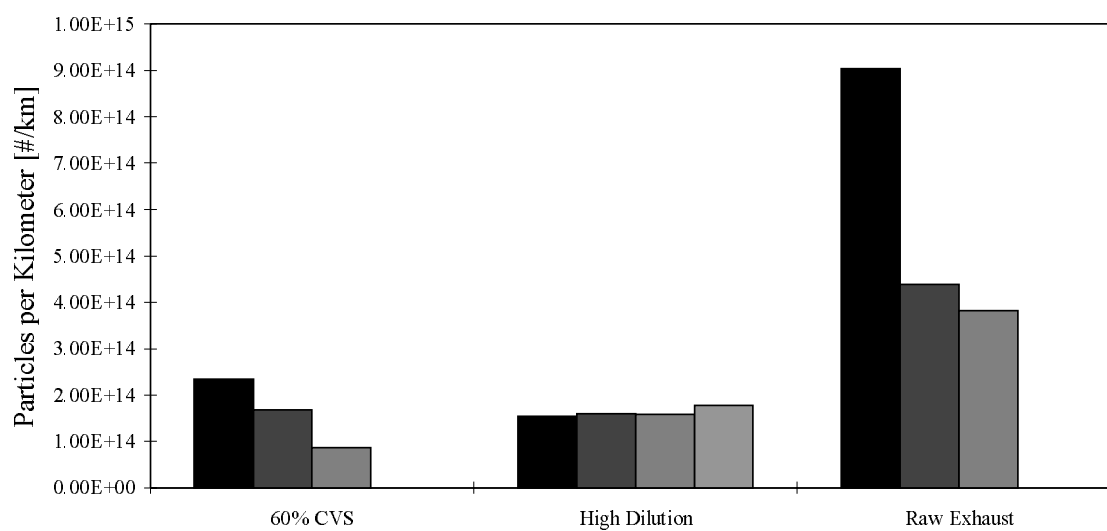
**Figure 31.**

**Particles per second using SMPS at different size bands over FAS drive cycle**



**Figure 32.**

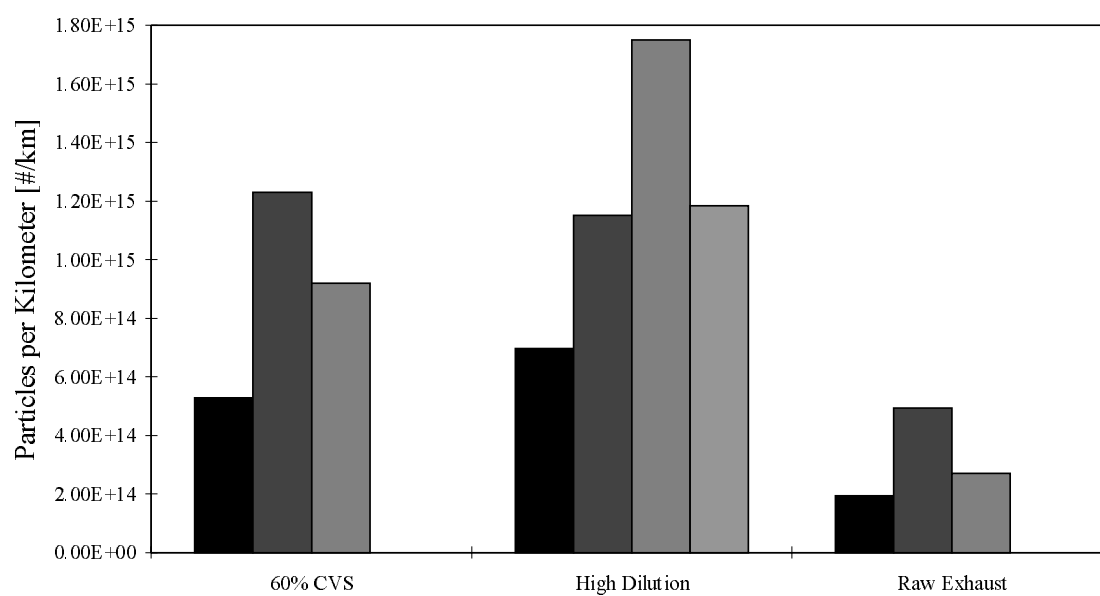
**Particles per kilometre over ECE drive cycle using CNC**





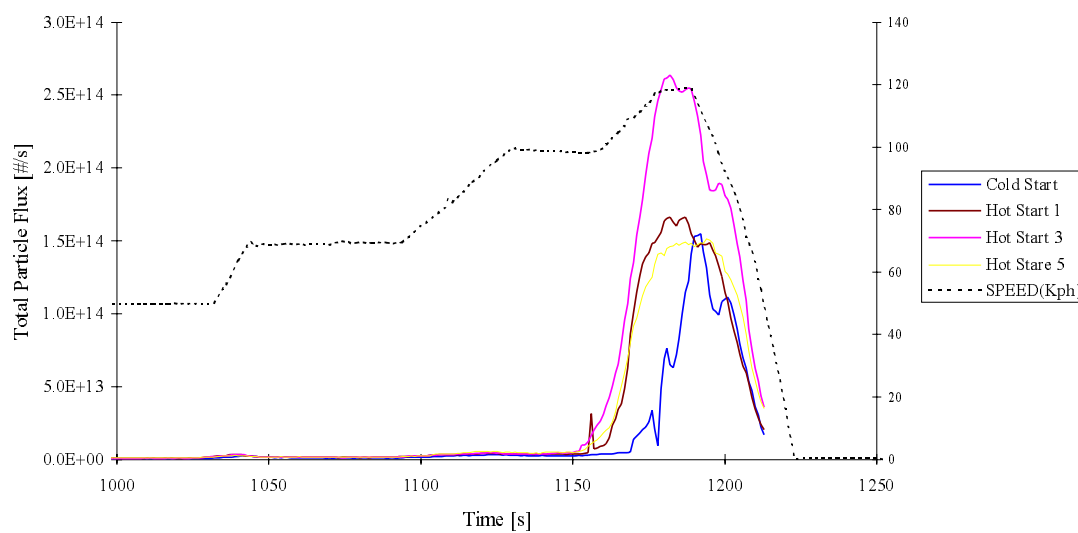
**Figure 33.**

**Particles per kilometre over EU drive cycle using CNC**



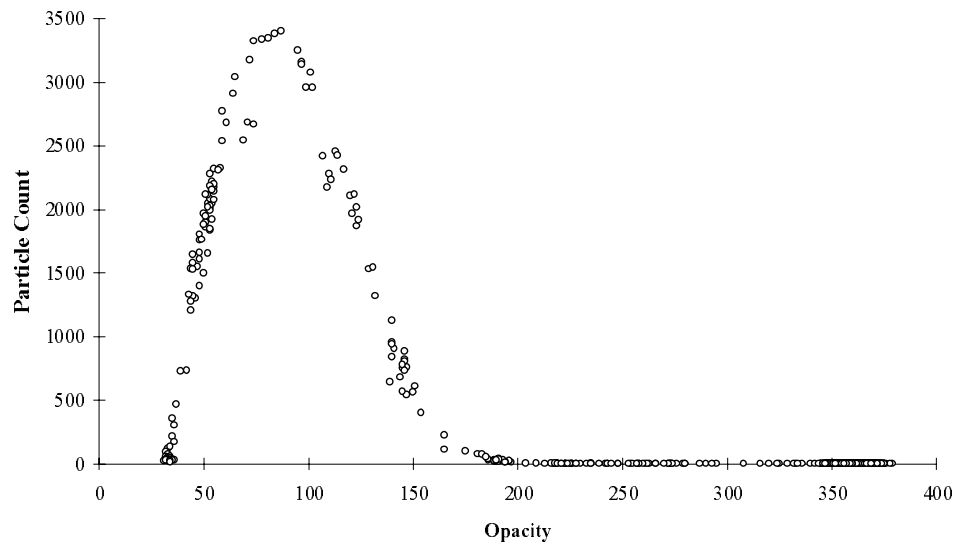
**Figure 34.**

**Particle flux at the end of the EU drive cycle**



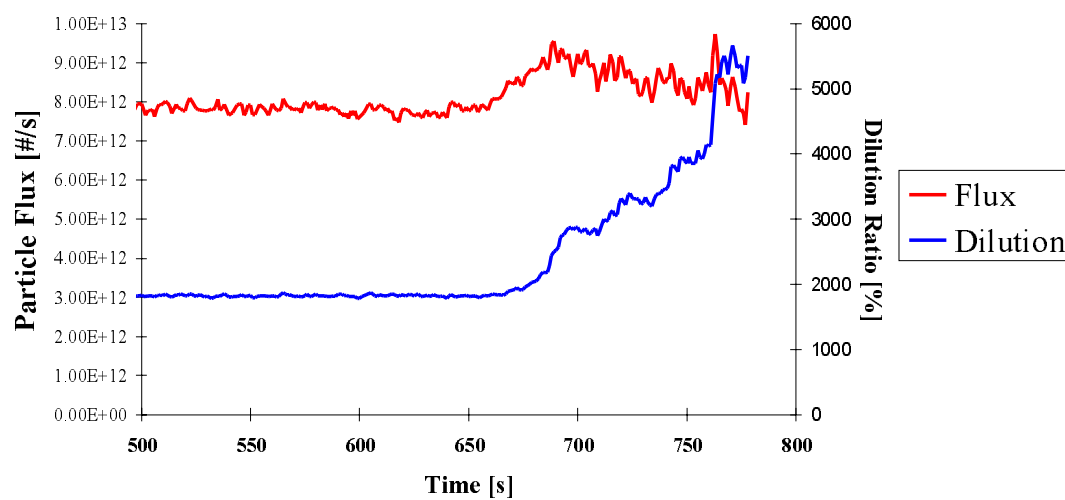
**Figure 35.**

**CNC particle count against opacity.**

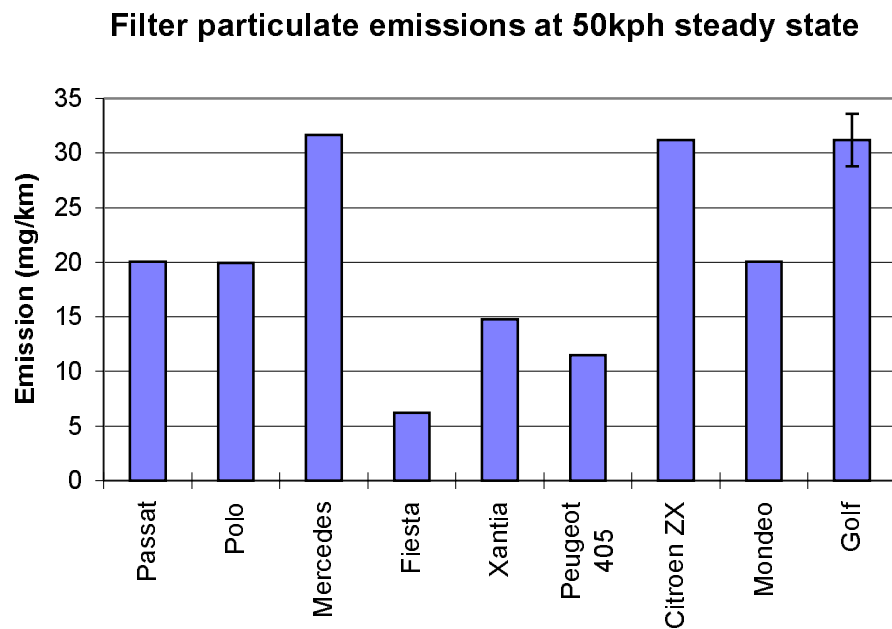


**Figure 36.**

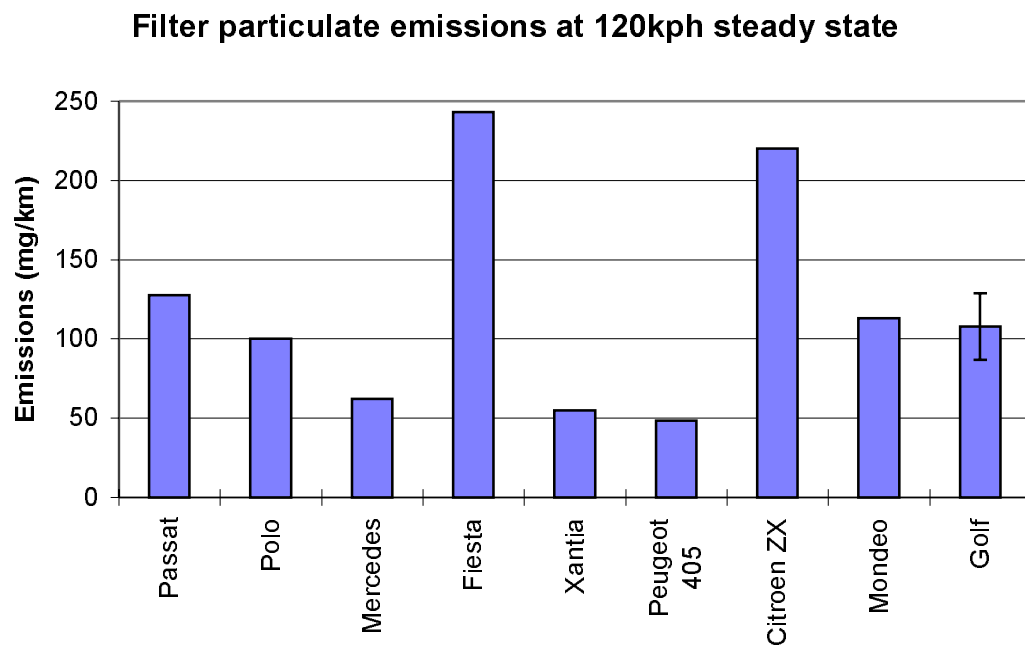
**Particle flux as a function of time and dilution at 120kph for the VW Passatt.**



**Figure 37.**

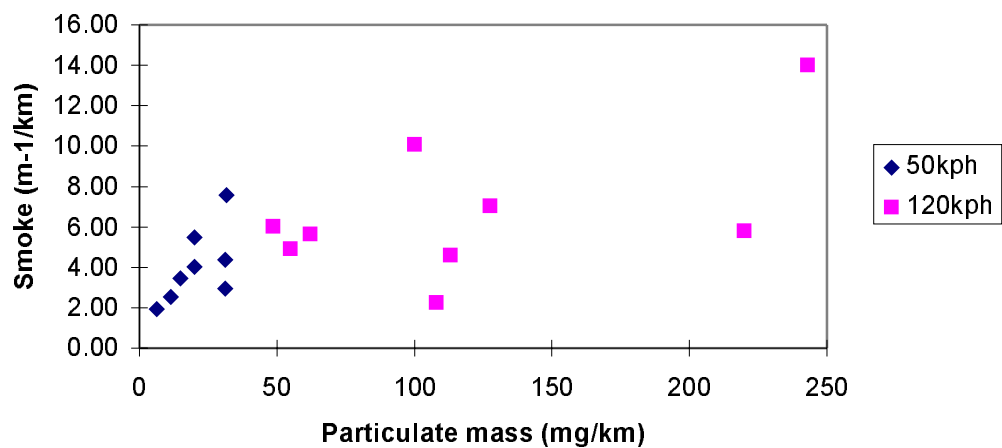


**Figure 38.**



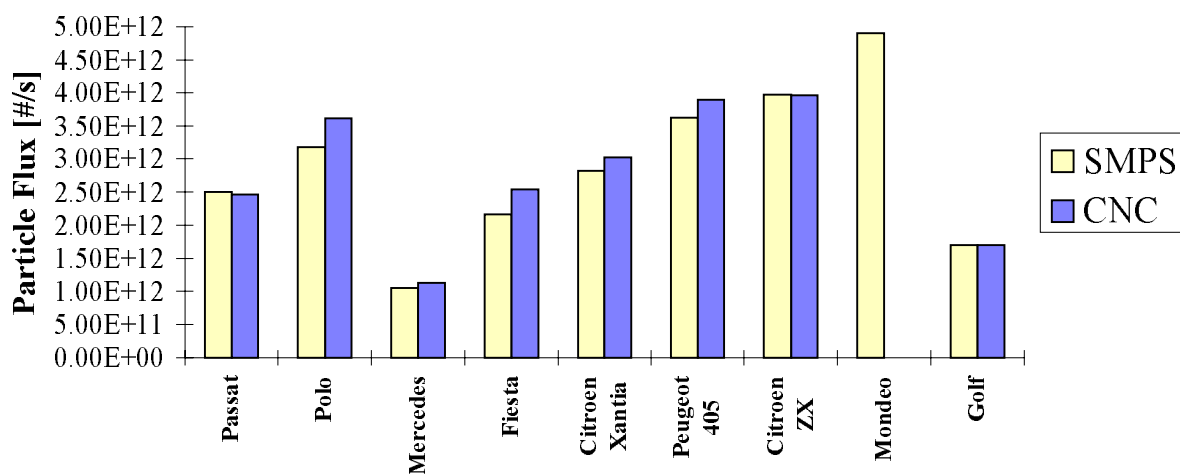
**Figure 39.**

**Relationship between particulate mass and Celesco  
smoke from steady state data**

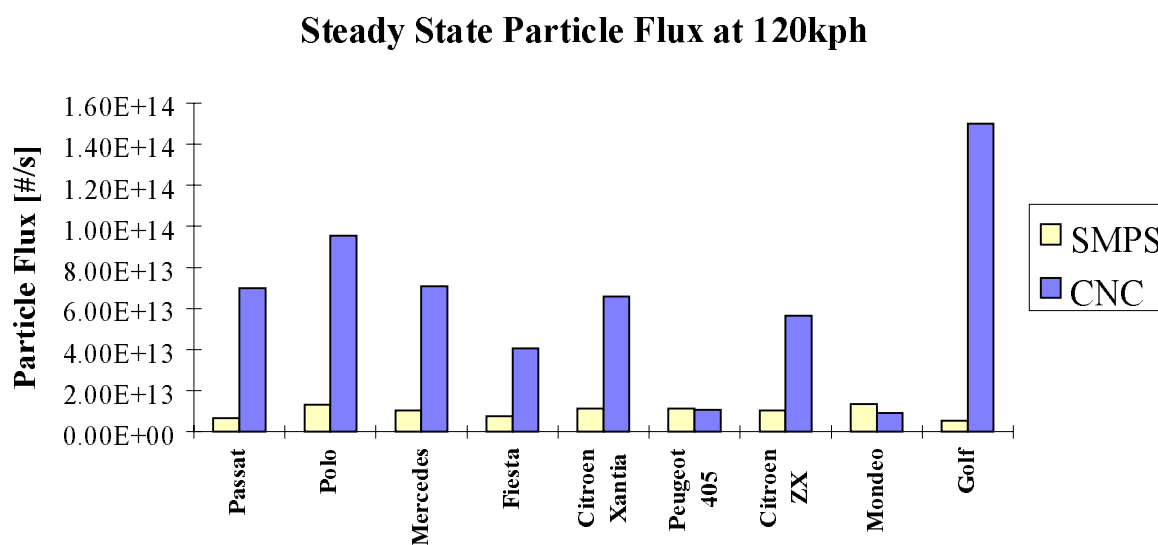


**Figure 40.**

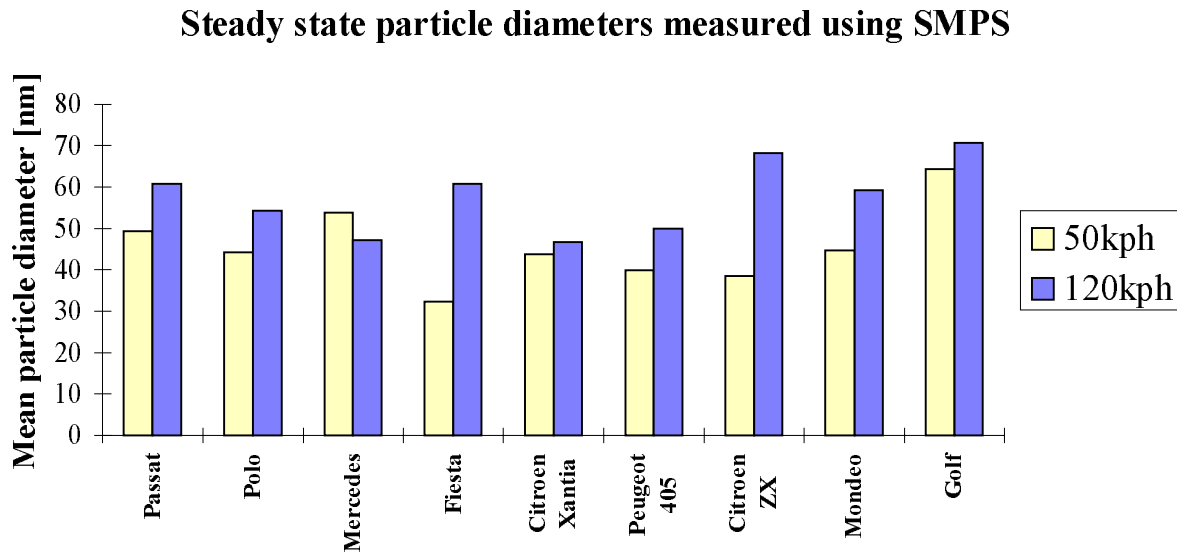
**Steady State Particle Flux at 50kph**



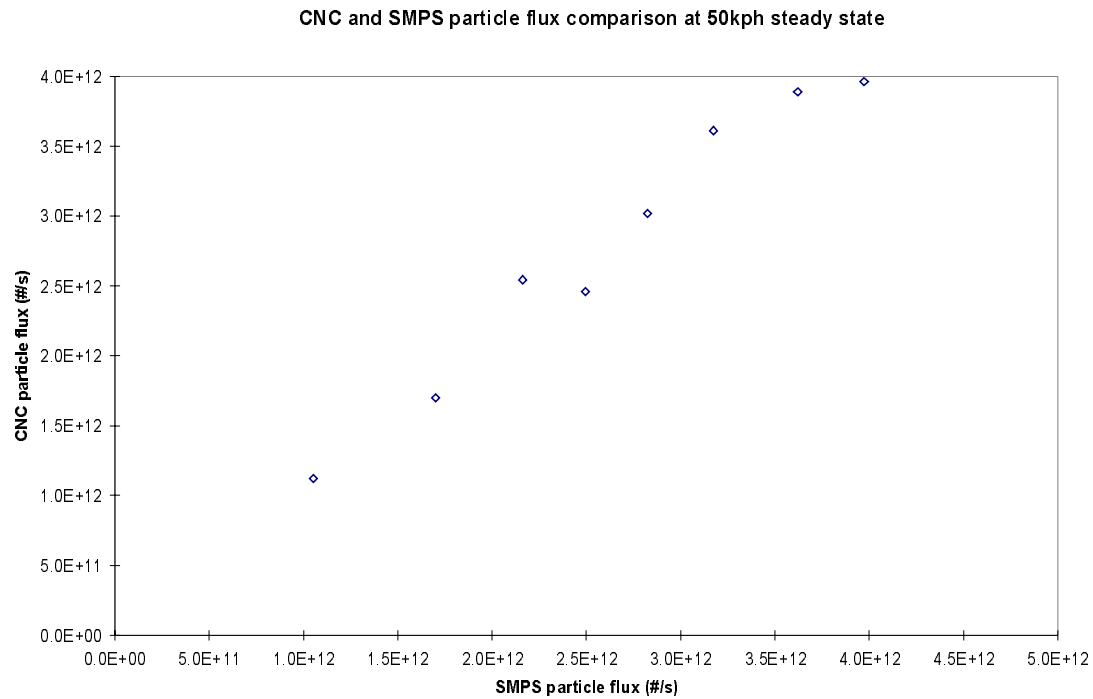
**Figure 41.**



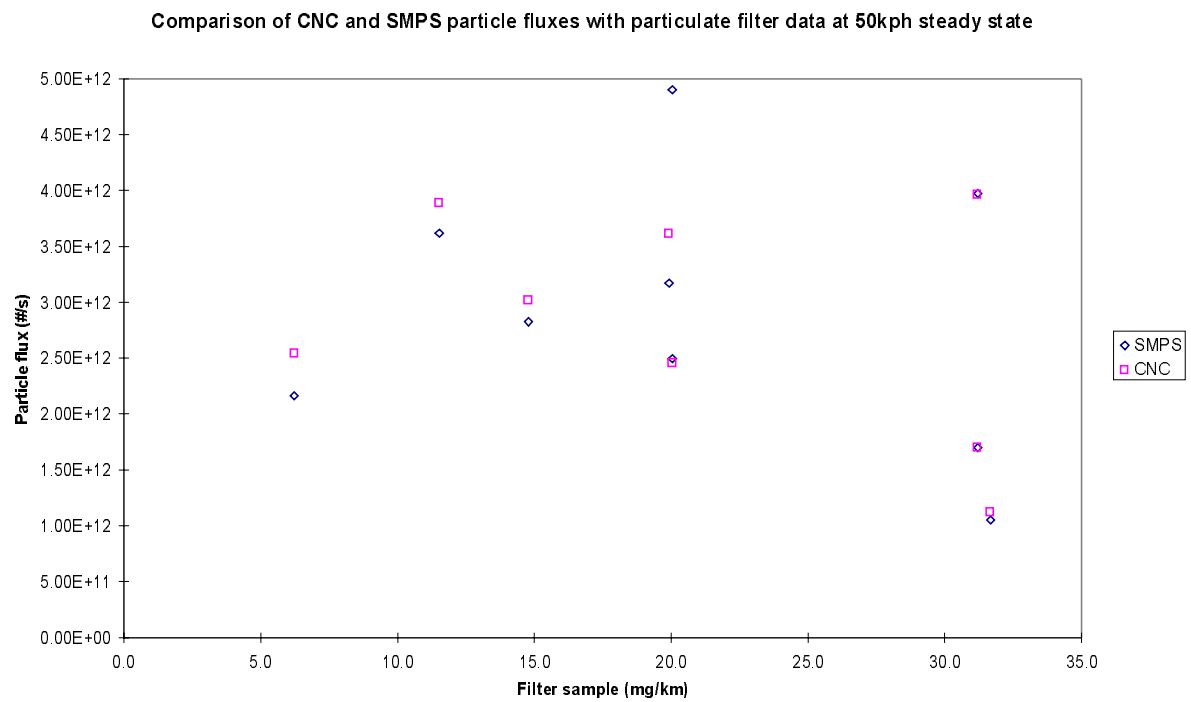
**Figure 42.**



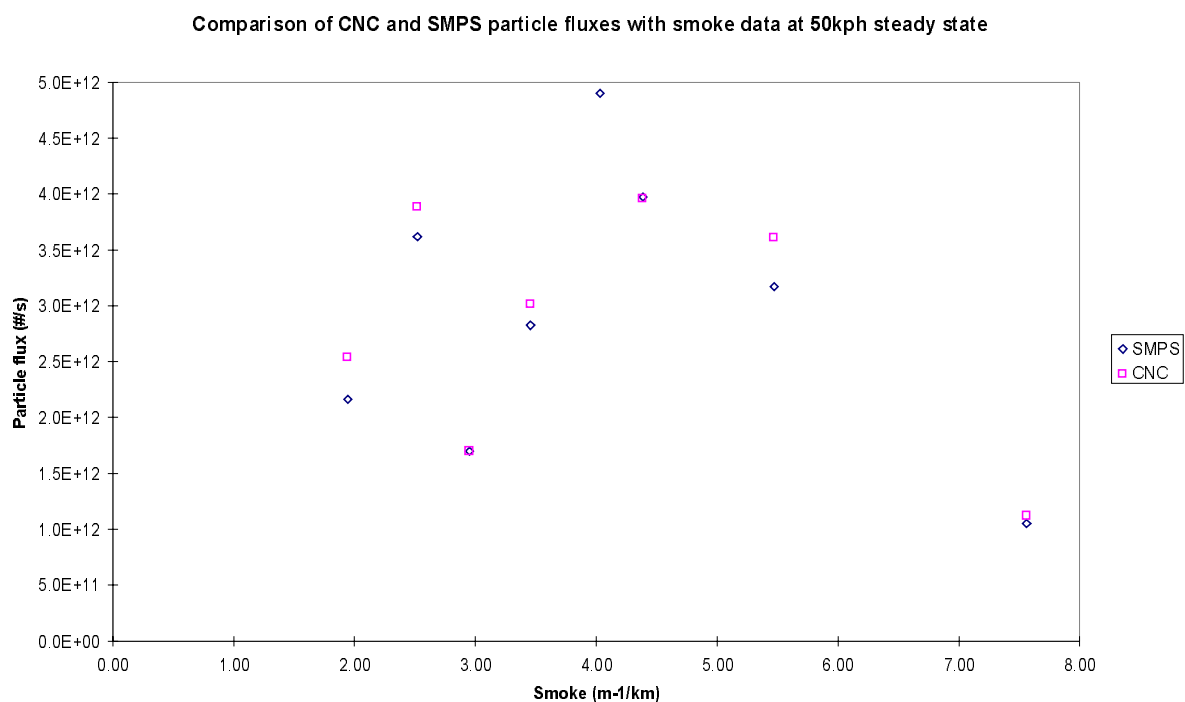
**Figure 43.**



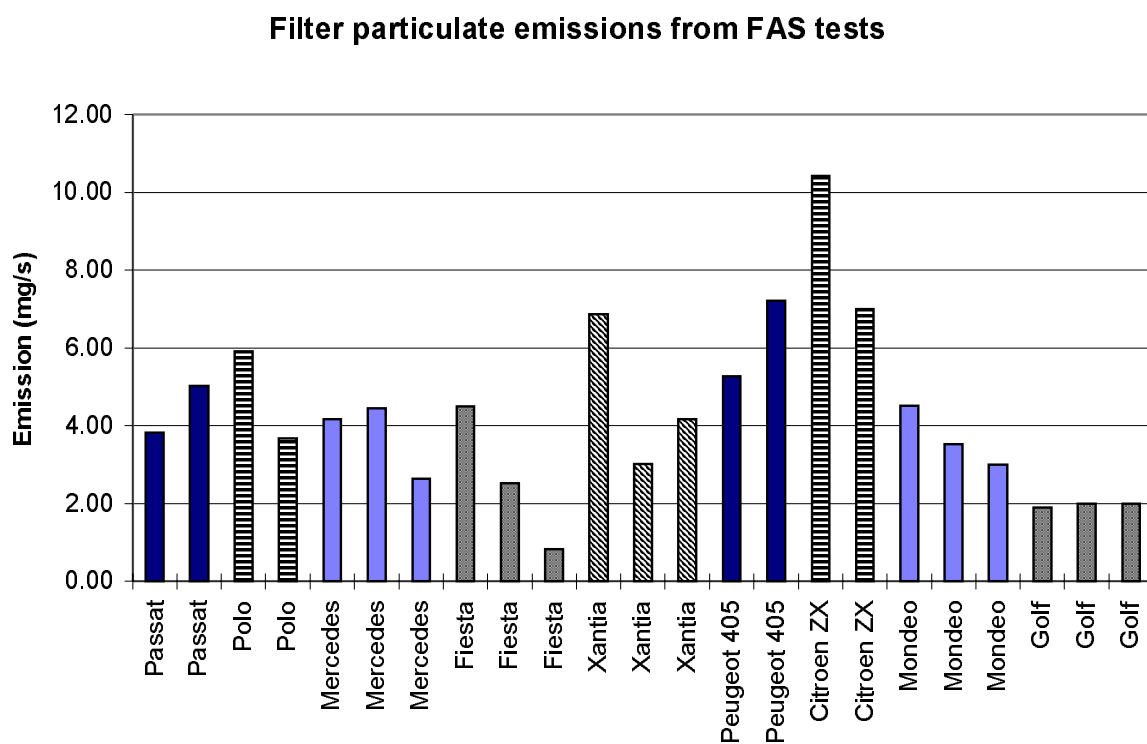
**Figure 44.**



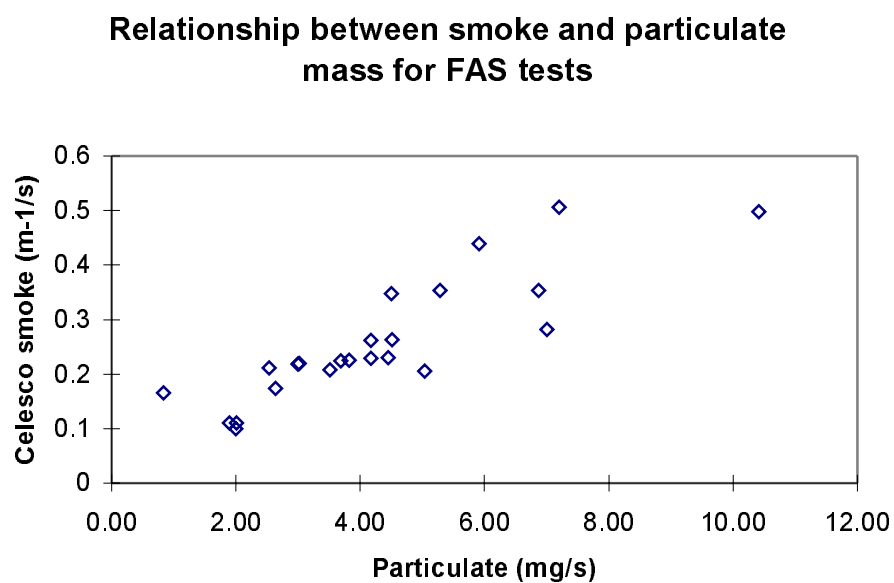
**Figure 45.**



**Figure 46.**

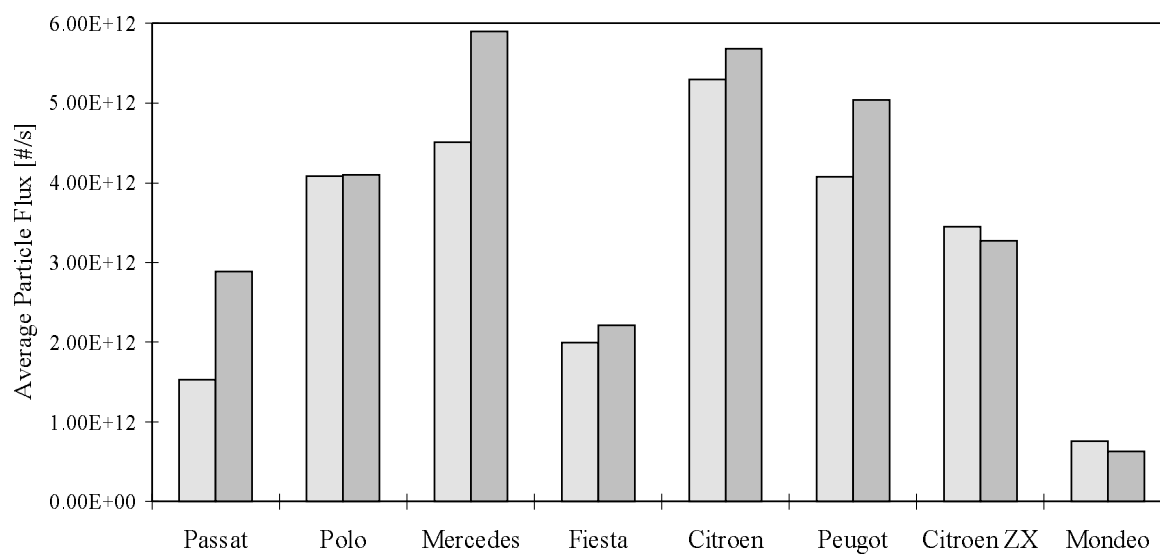


**Figure 47.**



**Figure 48.**

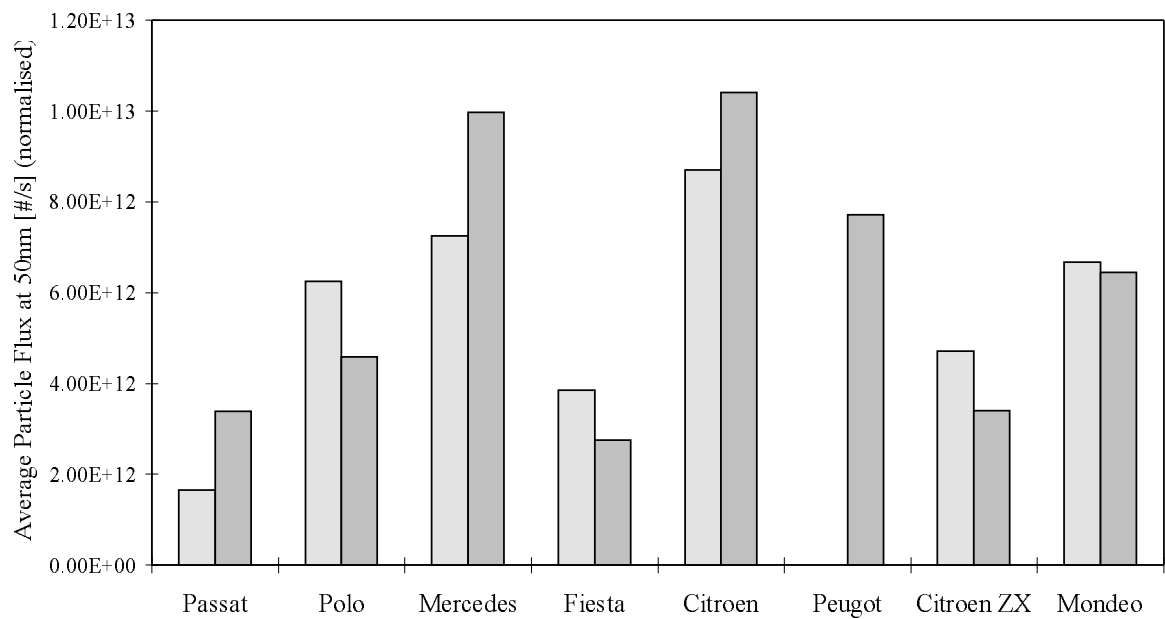
**Average particle flux over FAS tests (CNC)**





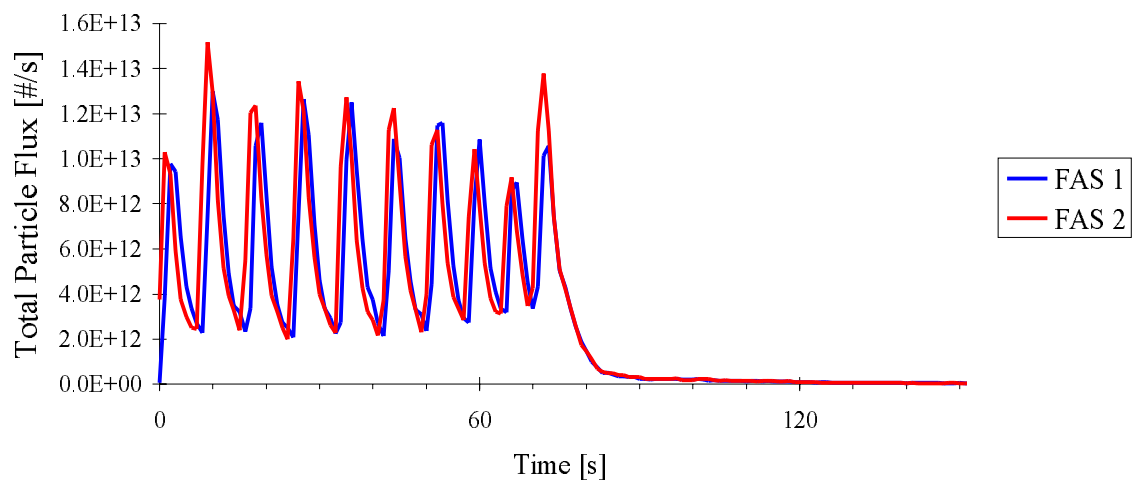
**Figure 49.**

**Average particle flux over FAS tests (SMPS)**



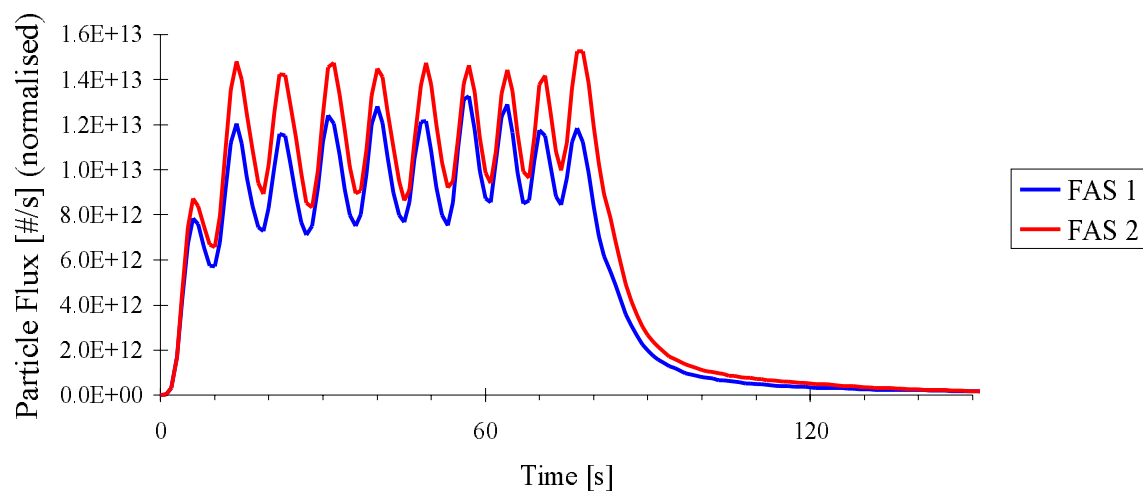
**Figure 50.**

**Particle flux during FAS tests on the Citroen Xantia (CNC)**



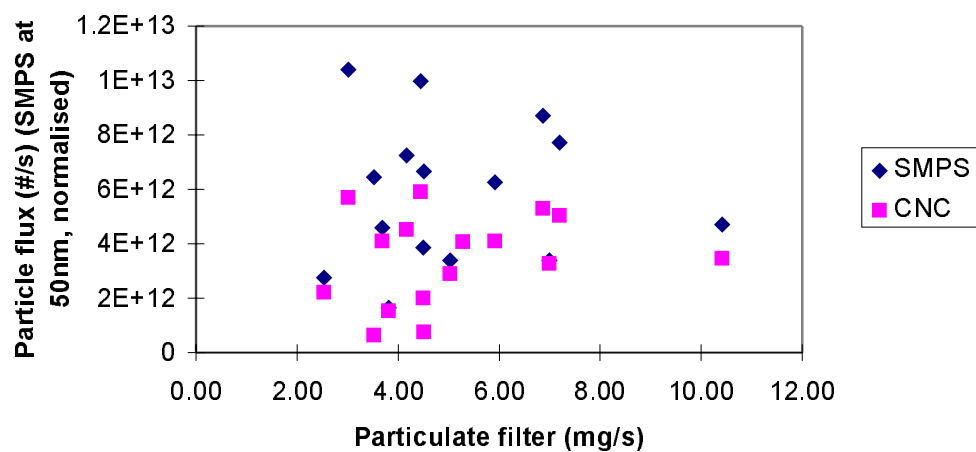
**Figure 51.**

**Particle flux during FAS tests on the Citroen Xantia (SMPS)**

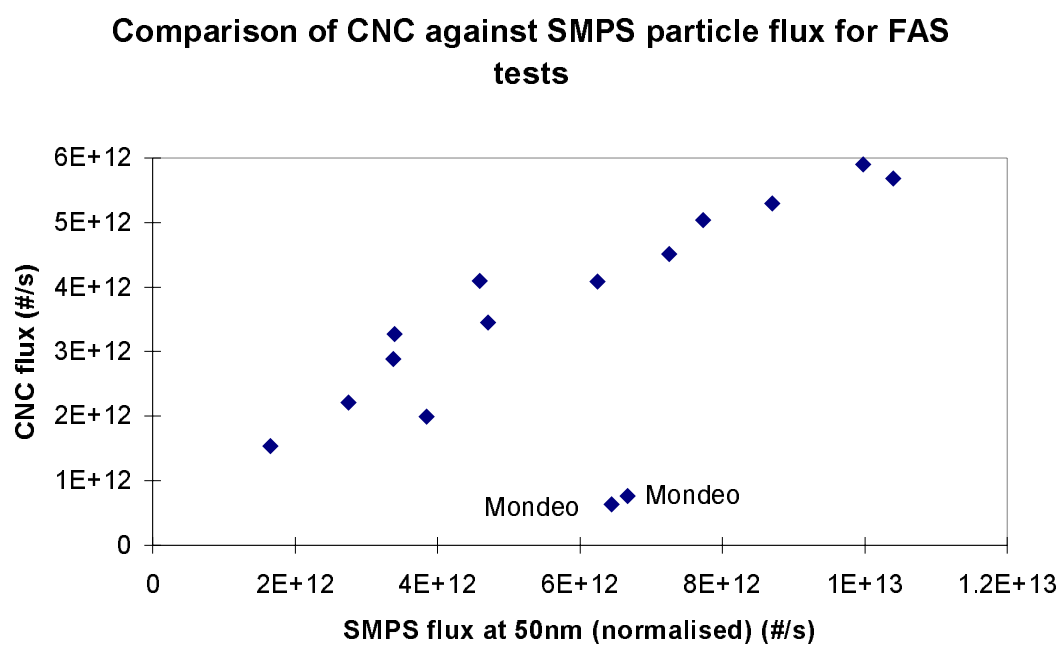


**Figure 52.**

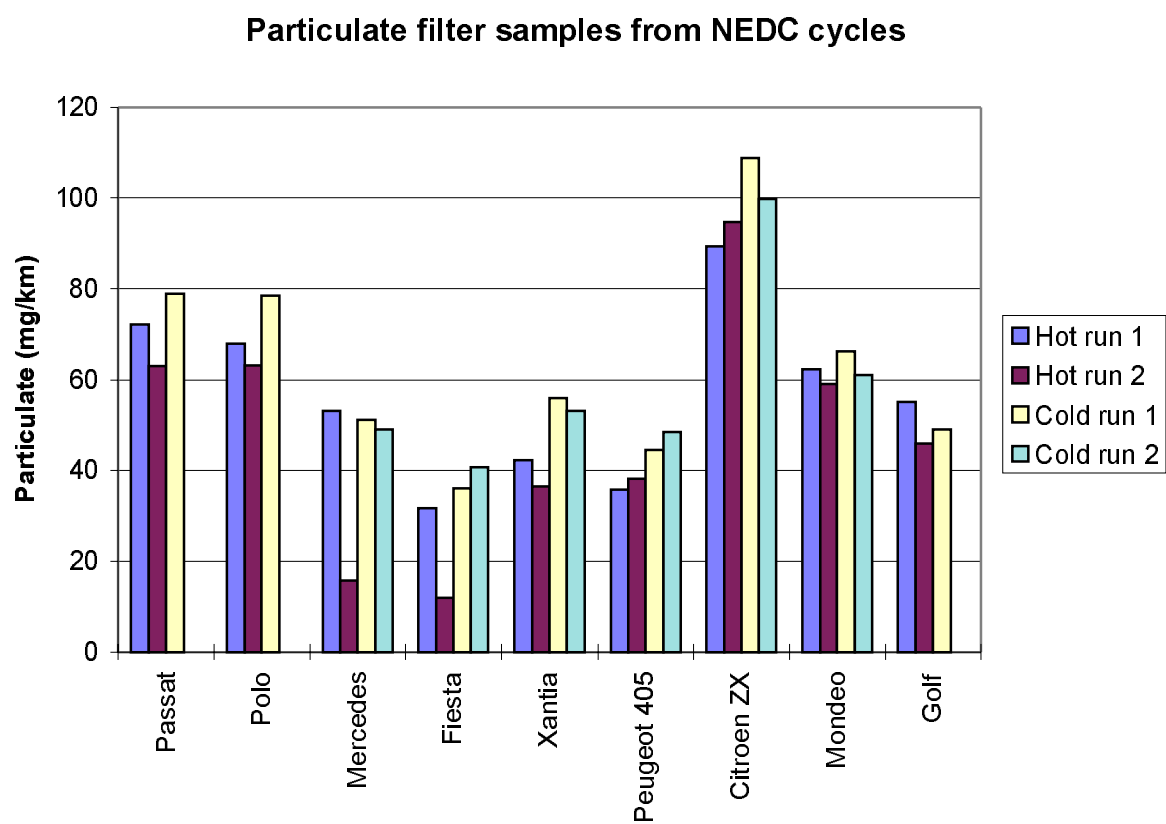
**Comparison of SMPS and CNC against filter mass for FAS tests**



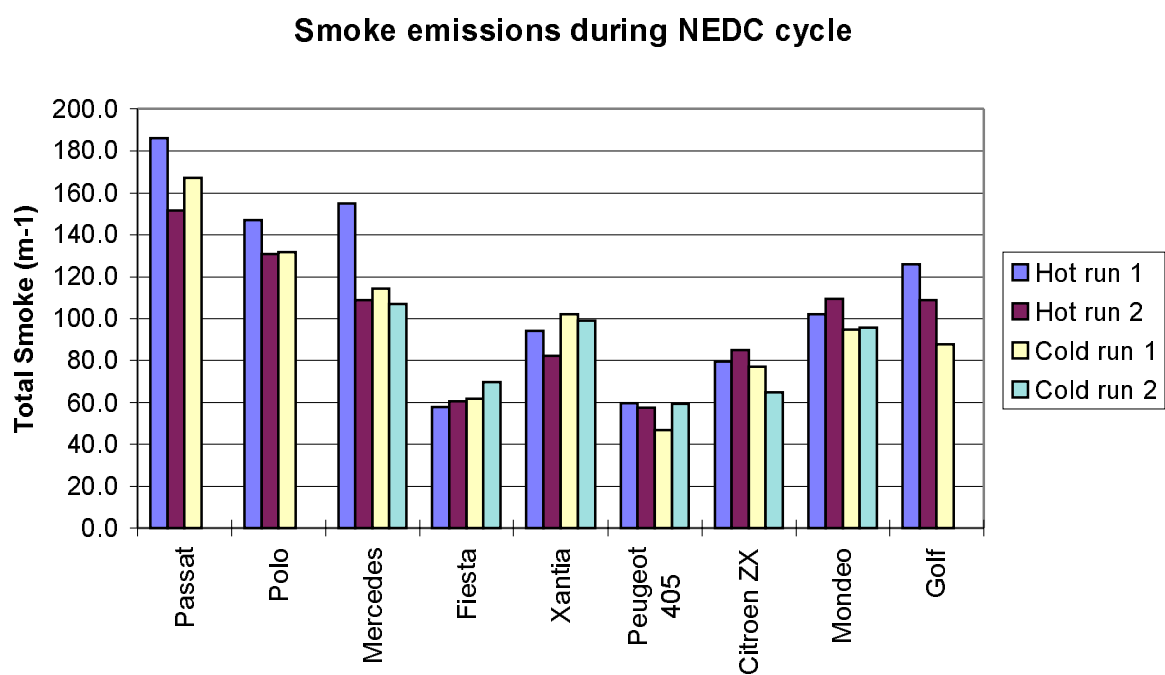
**Figure 53.**



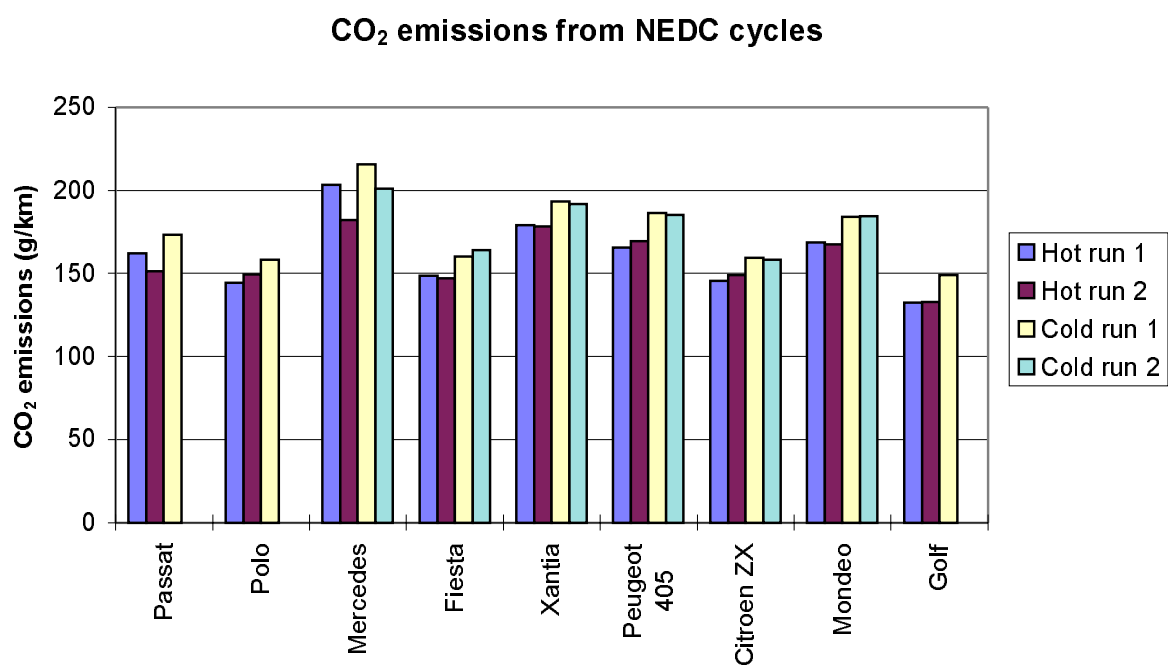
**Figure 54.**



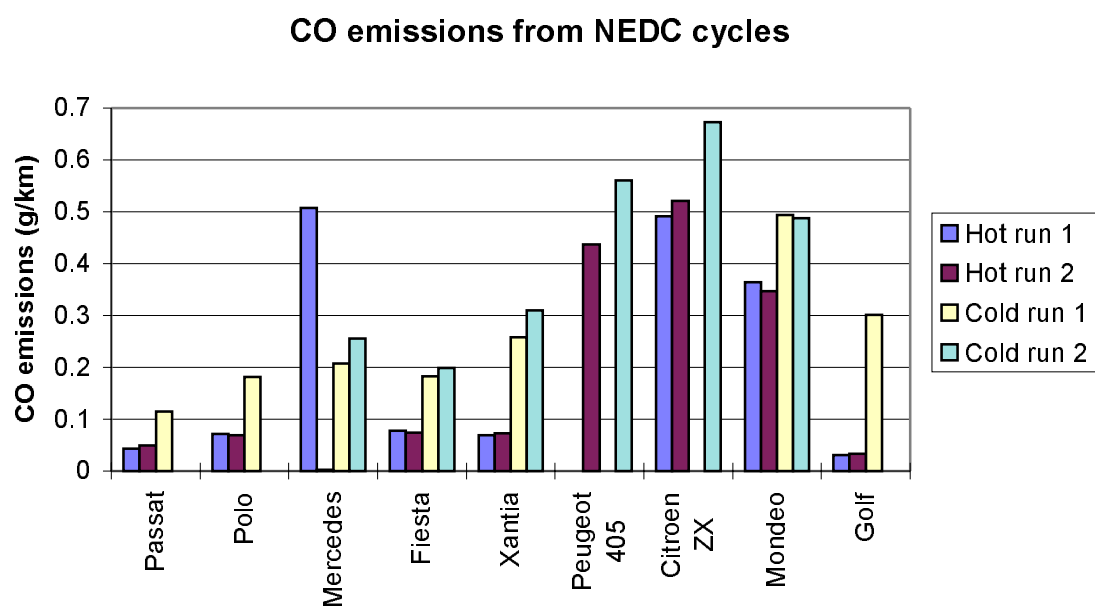
**Figure 55.**



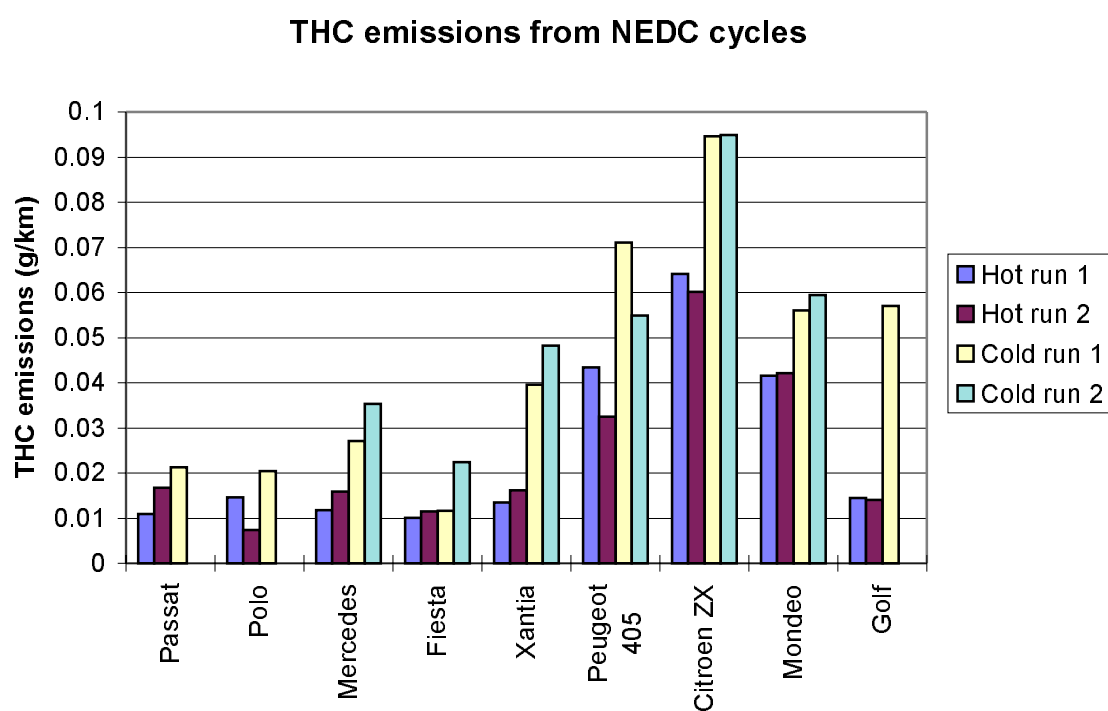
**Figure 56.**



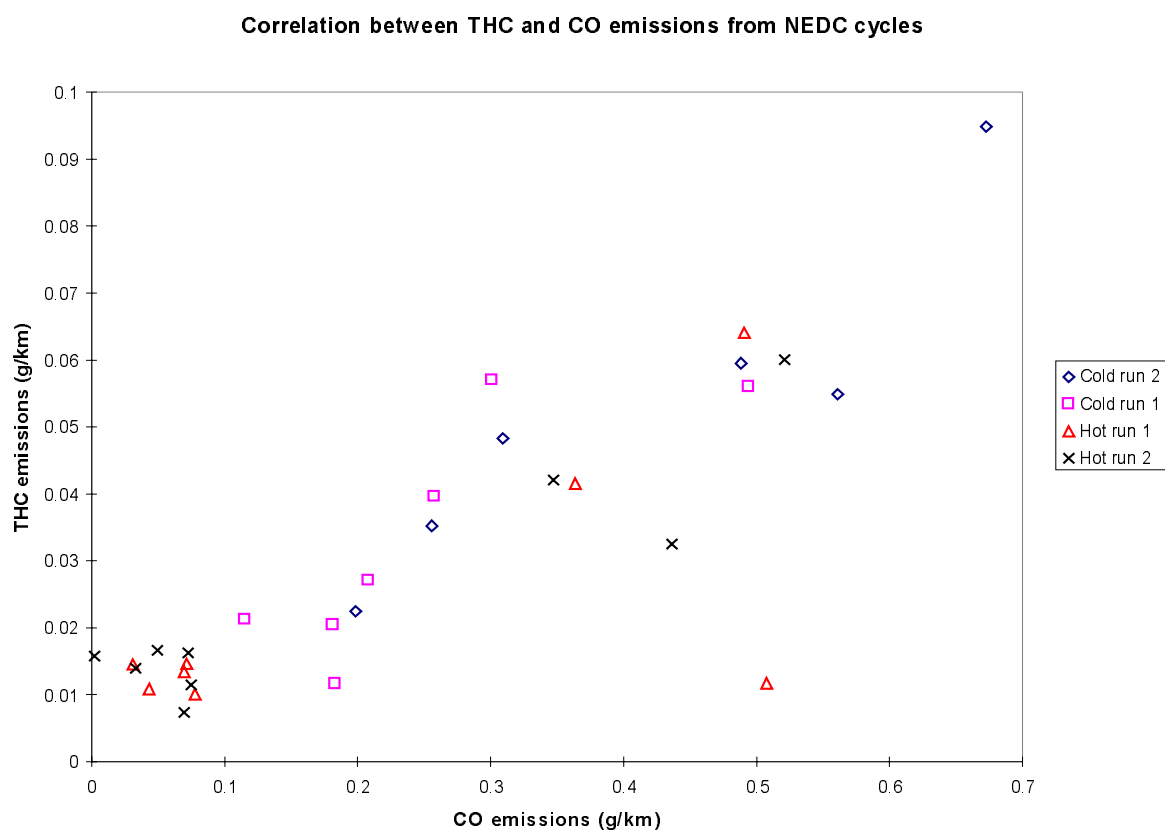
**Figure 57.**



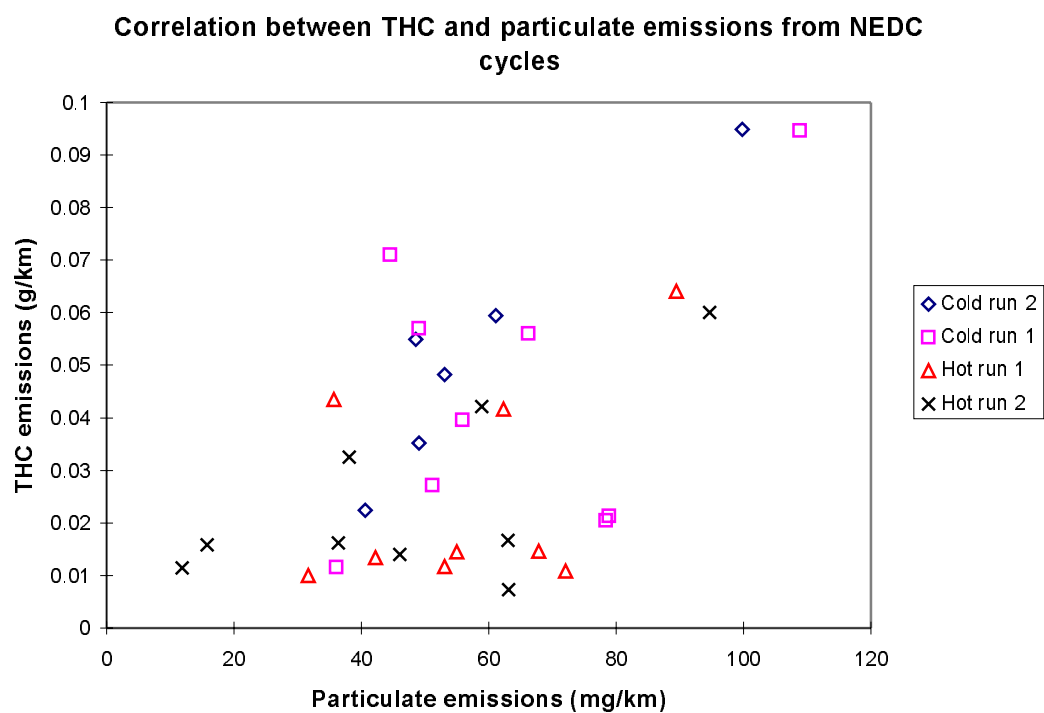
**Figure 58.**



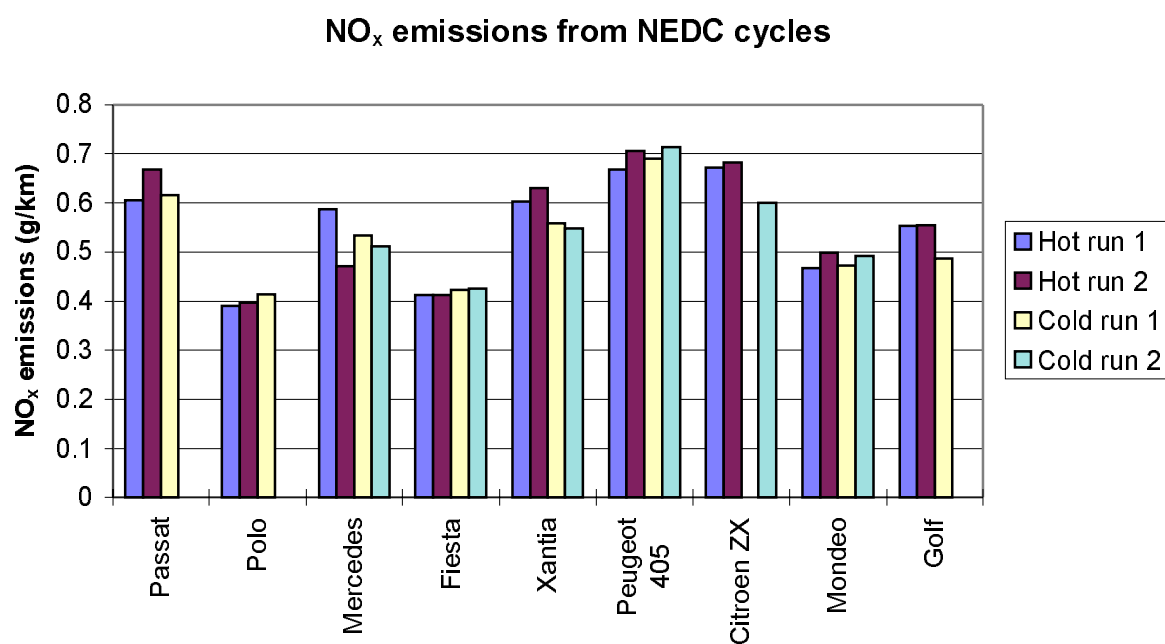
**Figure 59.**



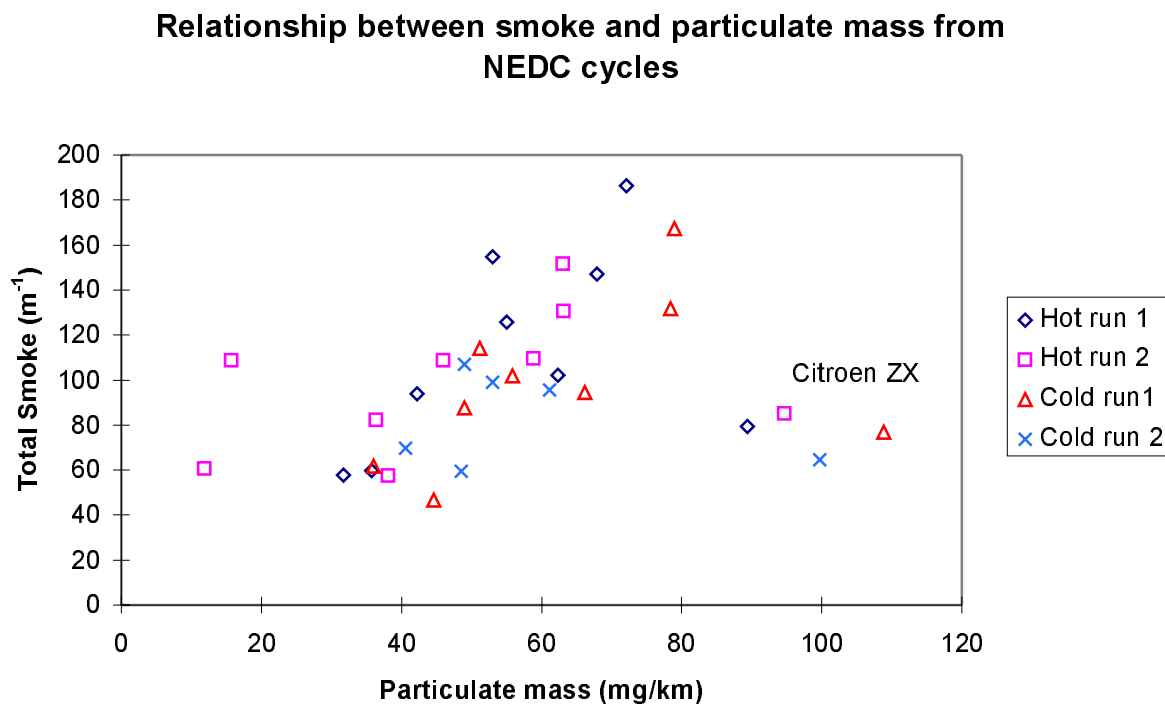
**Figure 60.**



**Figure 61.**

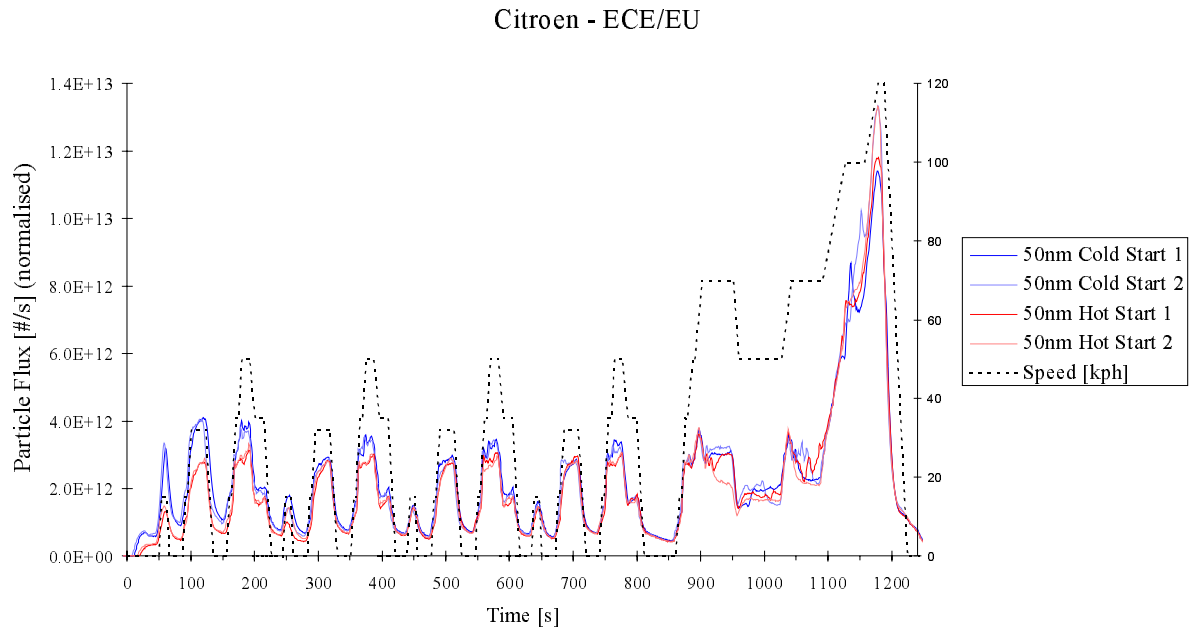


**Figure 62.**



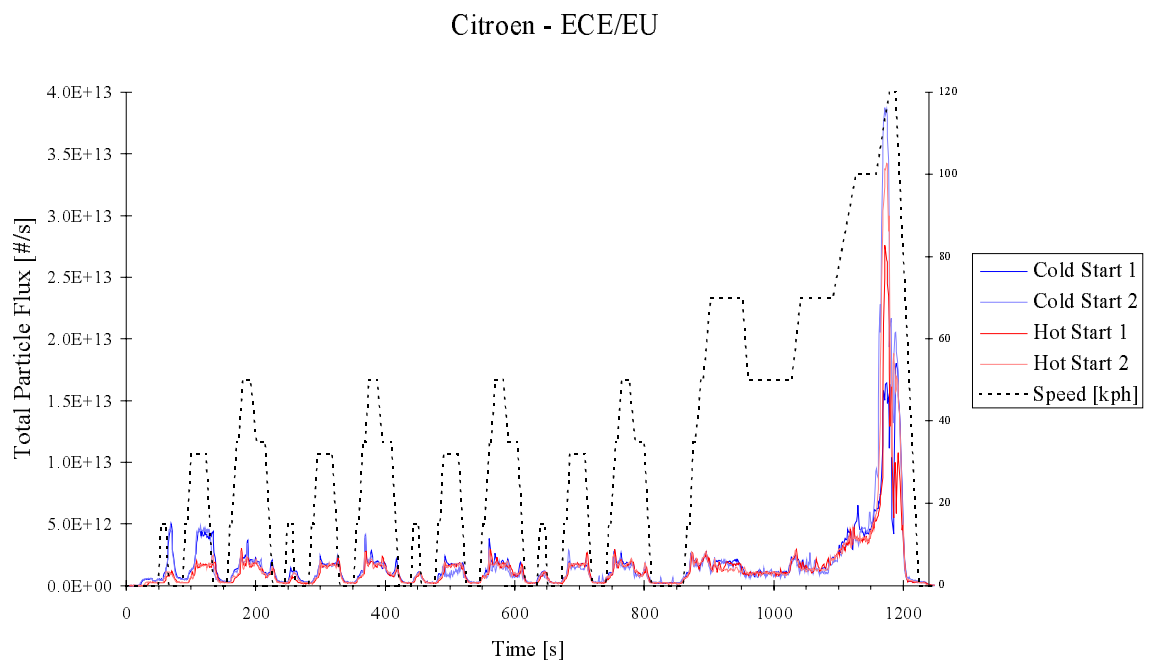
**Figure 63.**

**SMPS particle flux at 50nm during a NEDC for the Citroen Xantia.**



**Figure 64.**

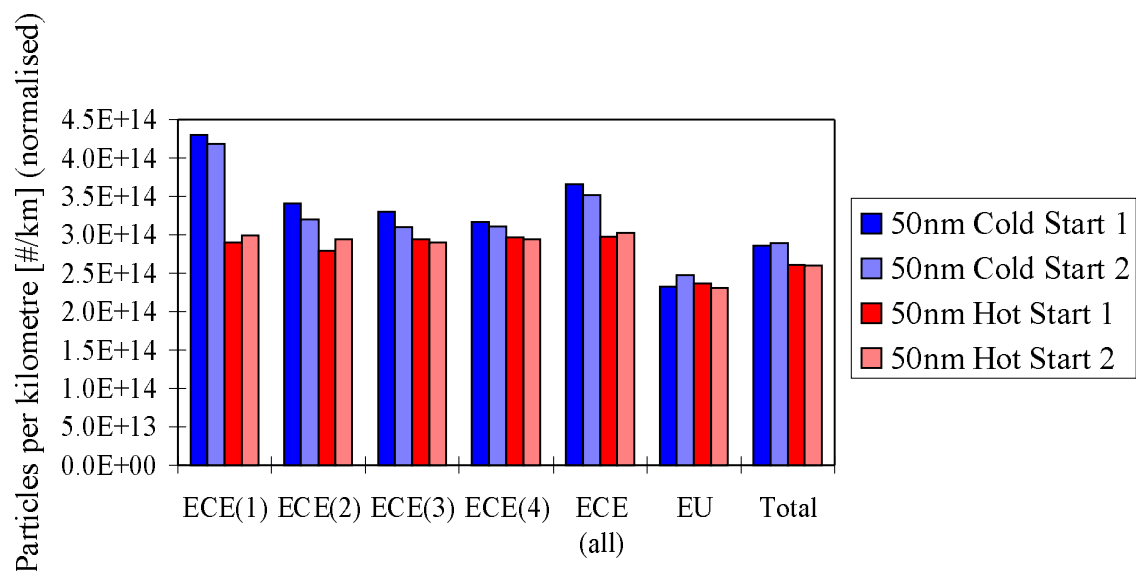
**CNC total particle flux as a function of time during a NEDC for Citroen Xantia.**





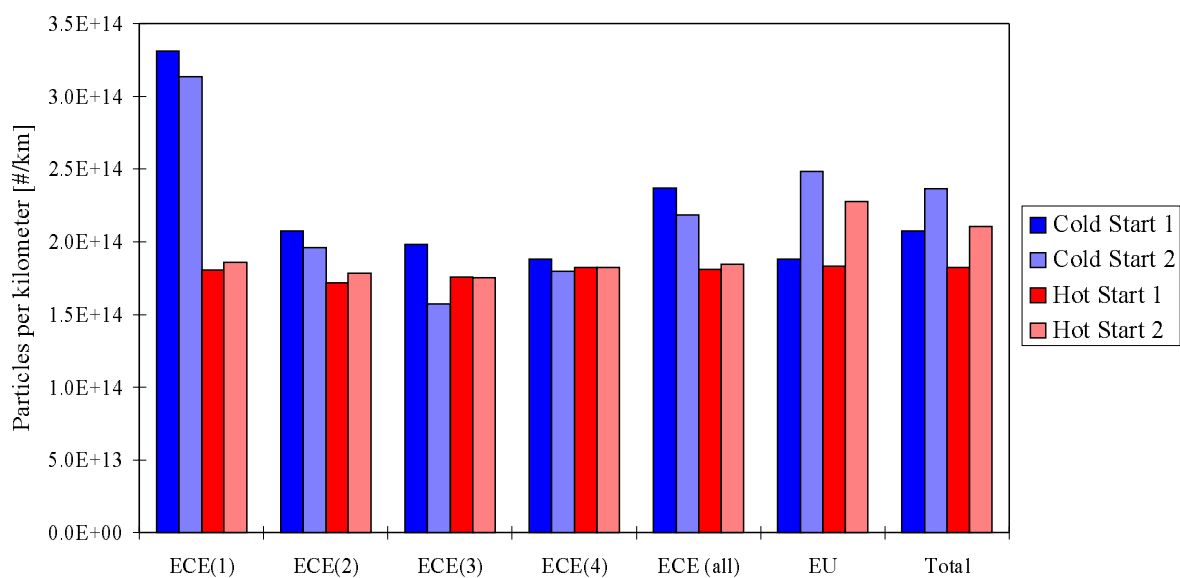
**Figure 65.**

**Particles per kilometre for the Citroen Xantia over NEDC for SMPS at 50nm**

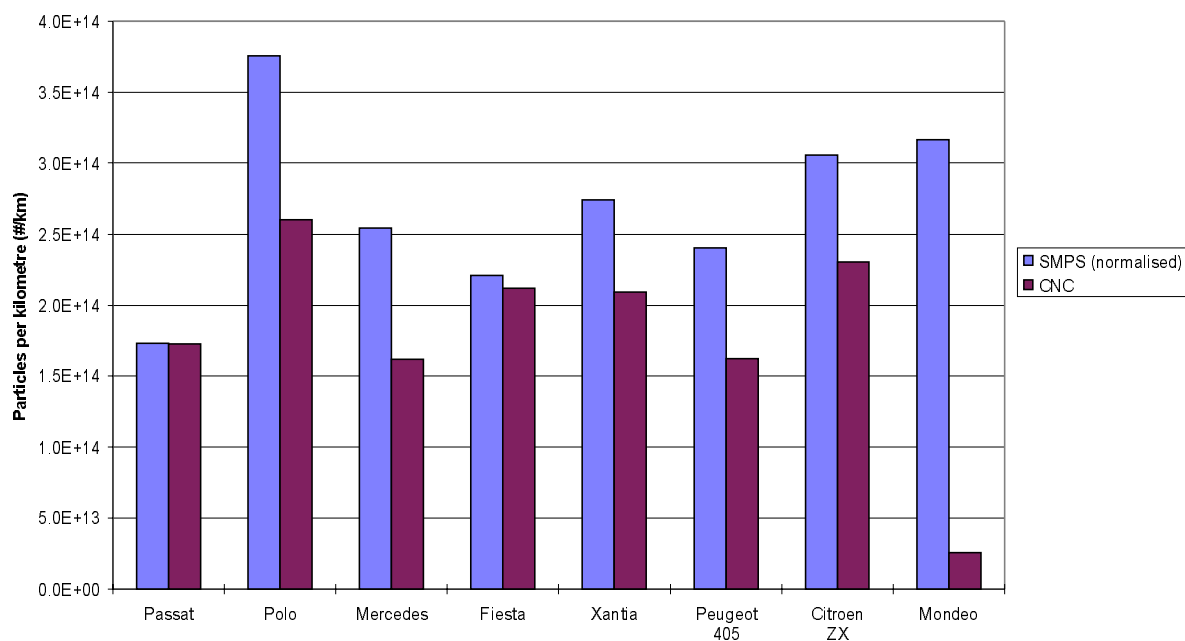


**Figure 66.**

**Total particles per kilometre for the Citroen Xantia over NEDC for CNC**

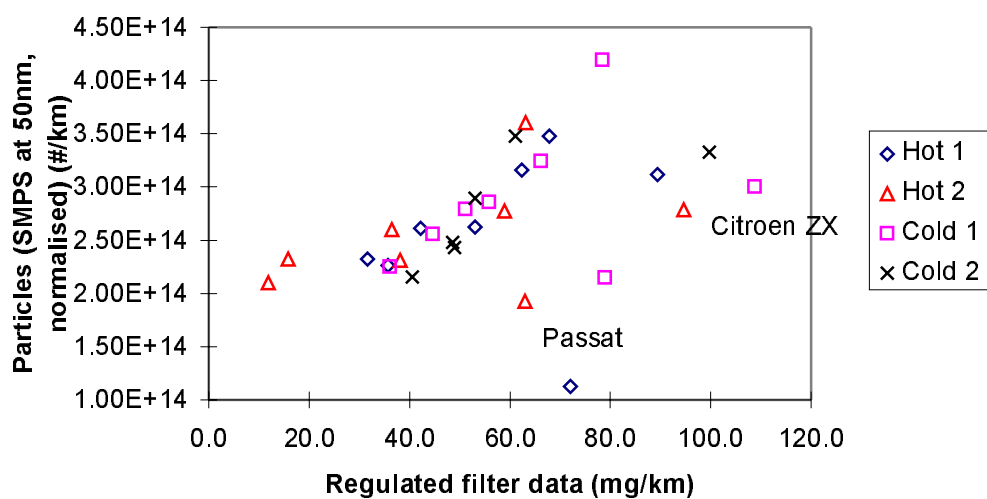


**Figure 67.**

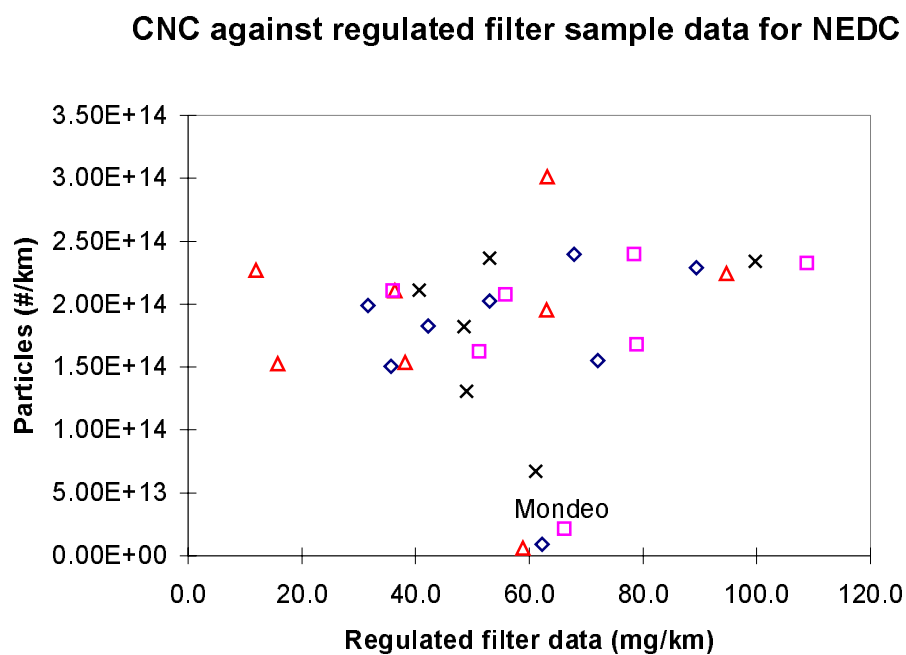


**Figure 68.**

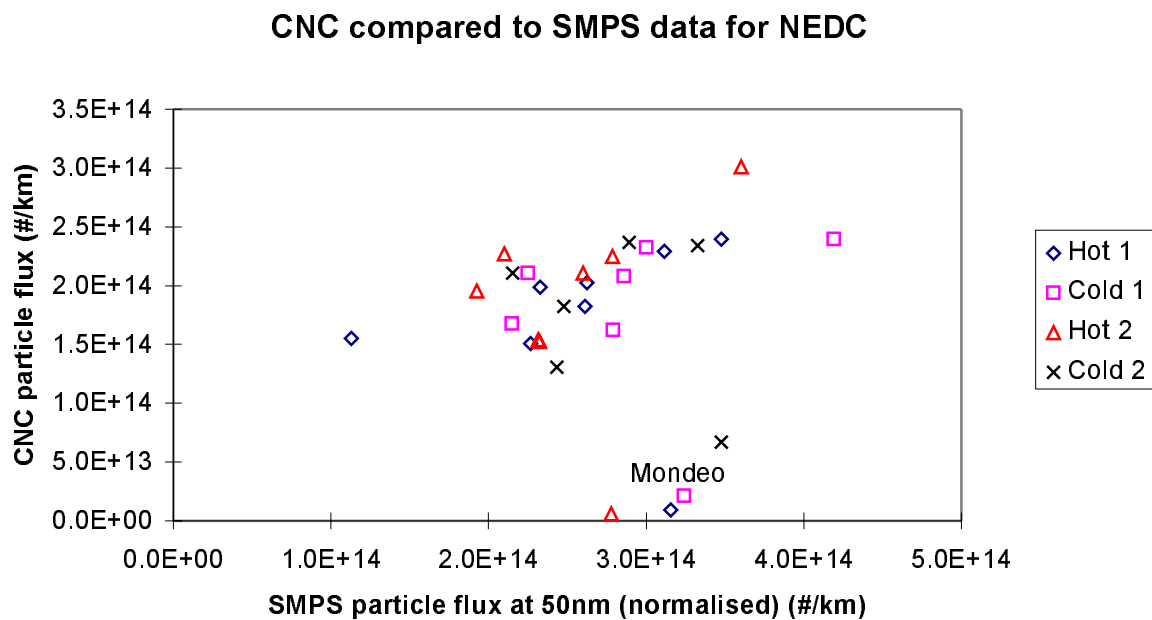
**SMPS versus regulated filter sample data for NEDC cycles**



**Figure 69.**

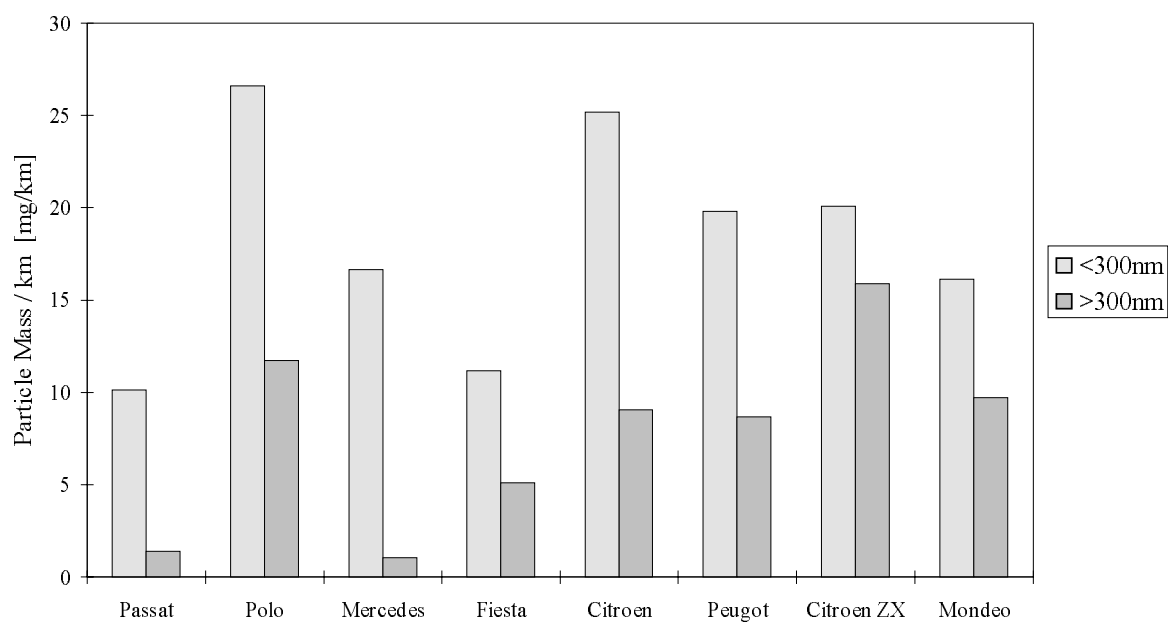


**Figure 70.**



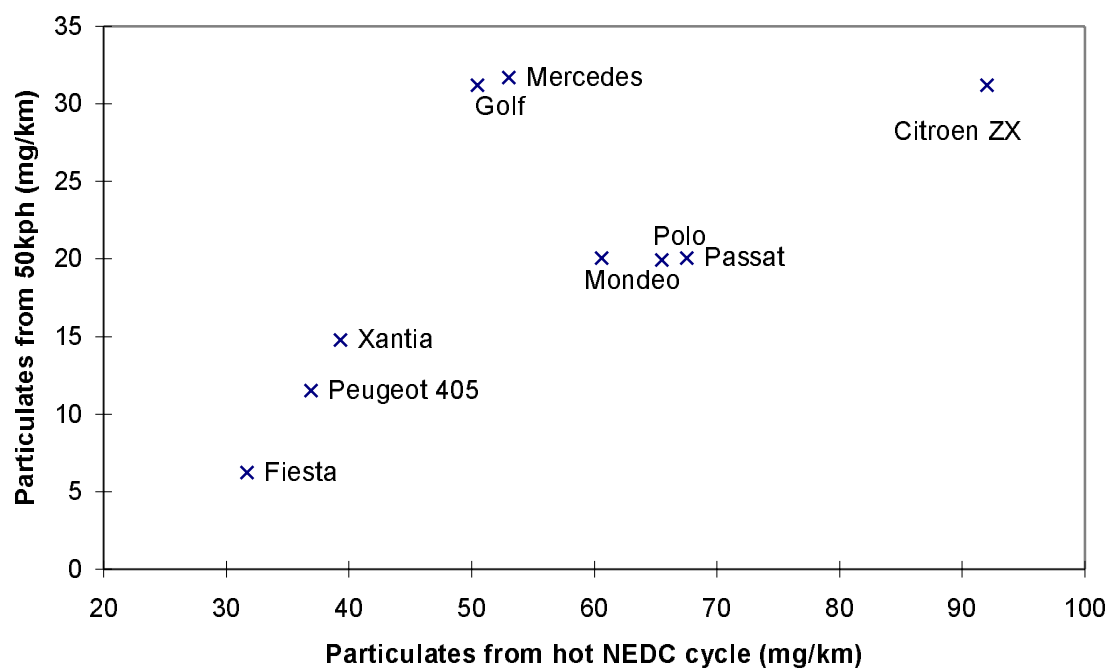
**Figure 71.**

**Mass/km above and below 300nm over NEDC**

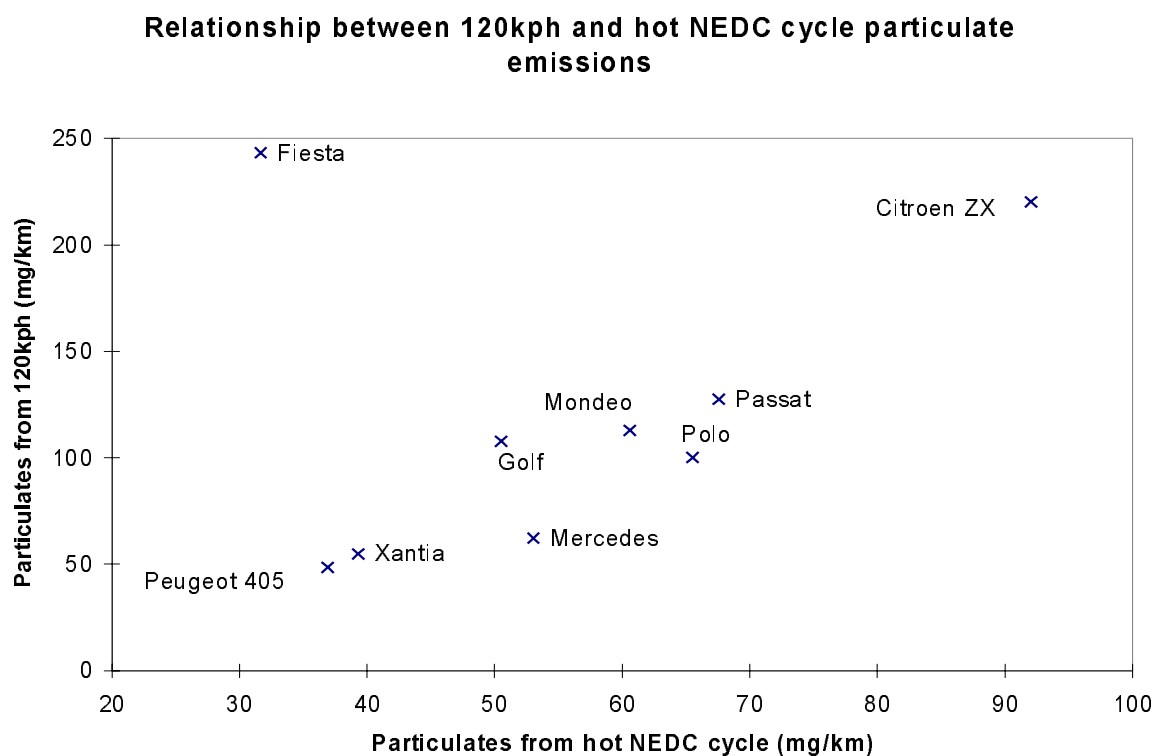


**Figure 72.**

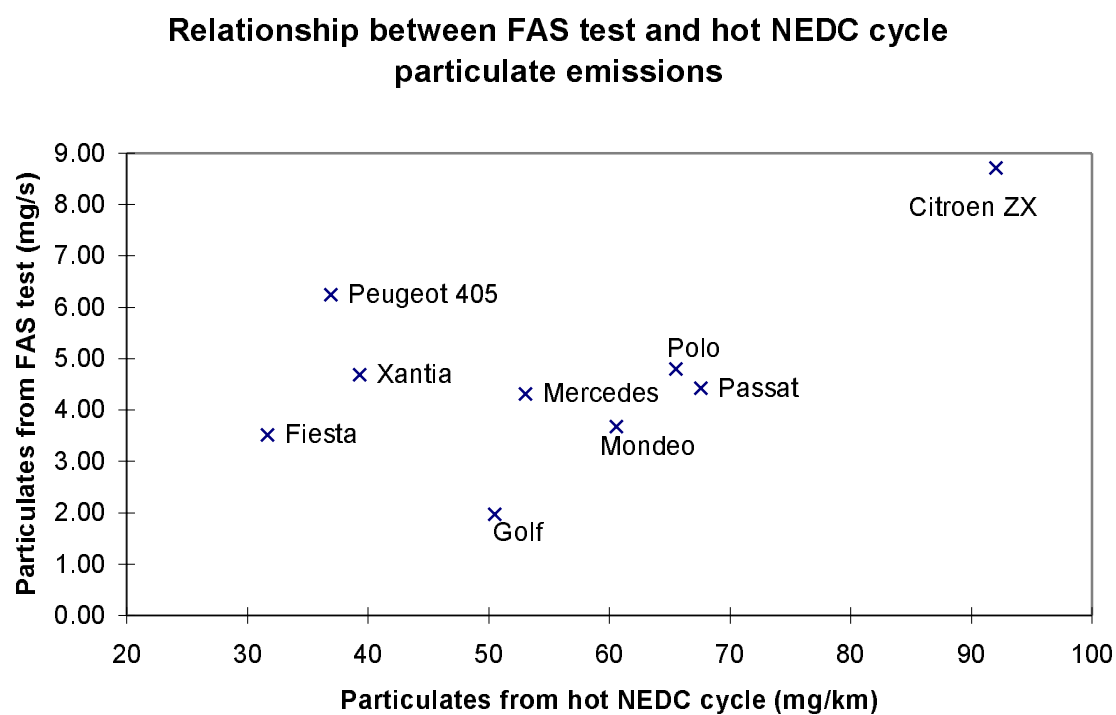
**Relationship between 50kph and hot NEDC cycle  
particulate emissions**



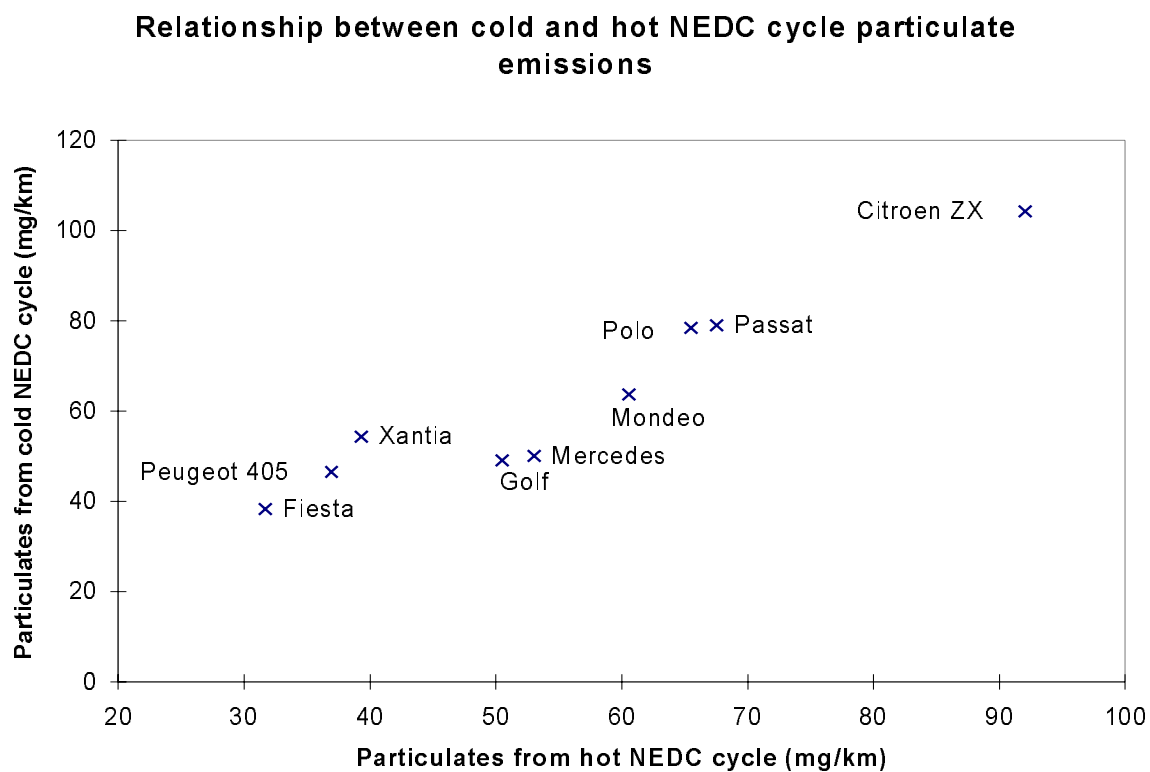
**Figure 73.**



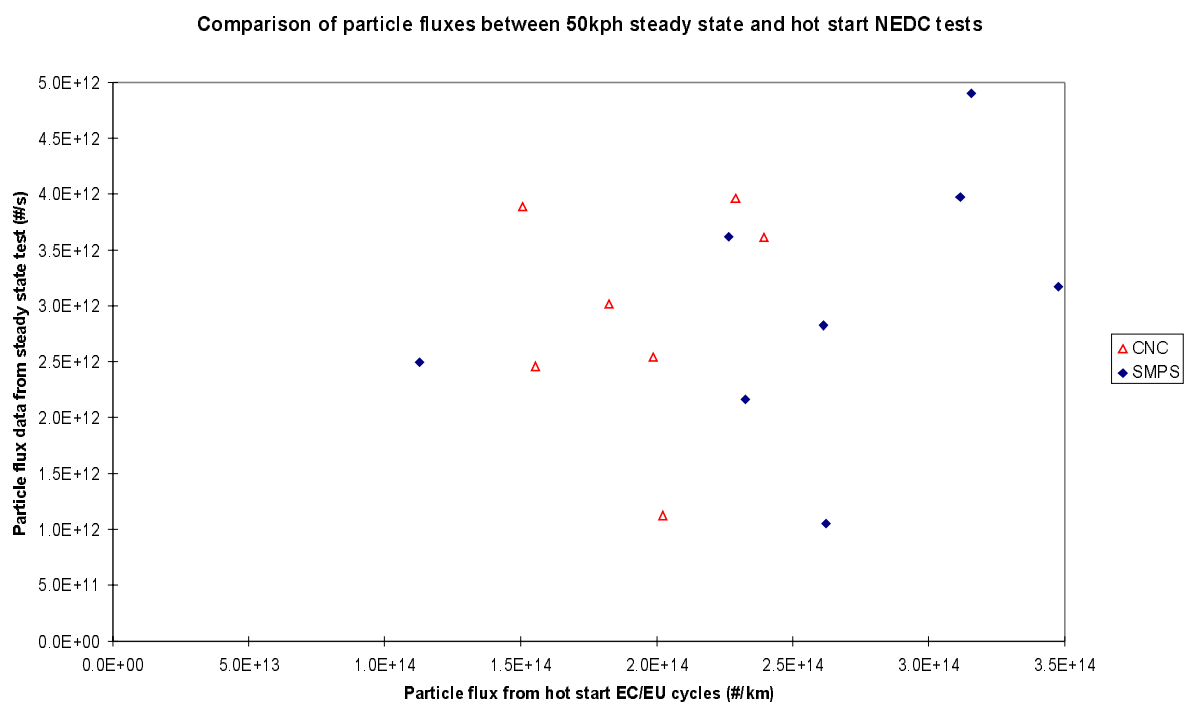
**Figure 74.**



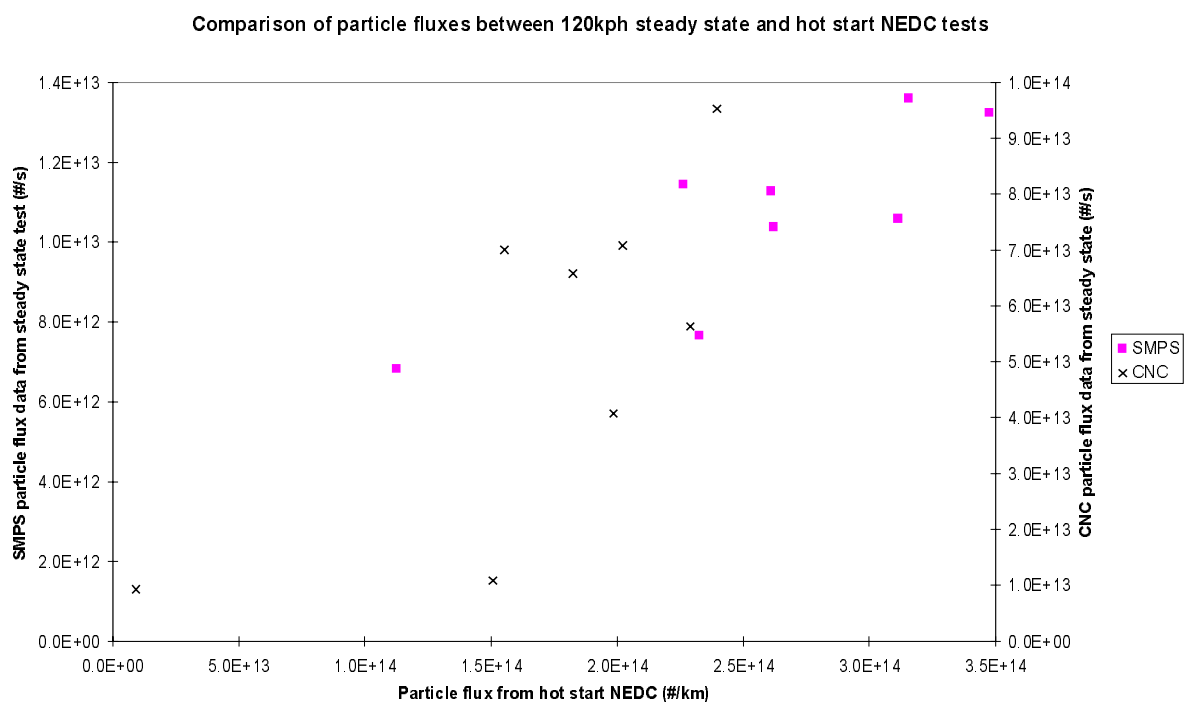
**Figure 75.**



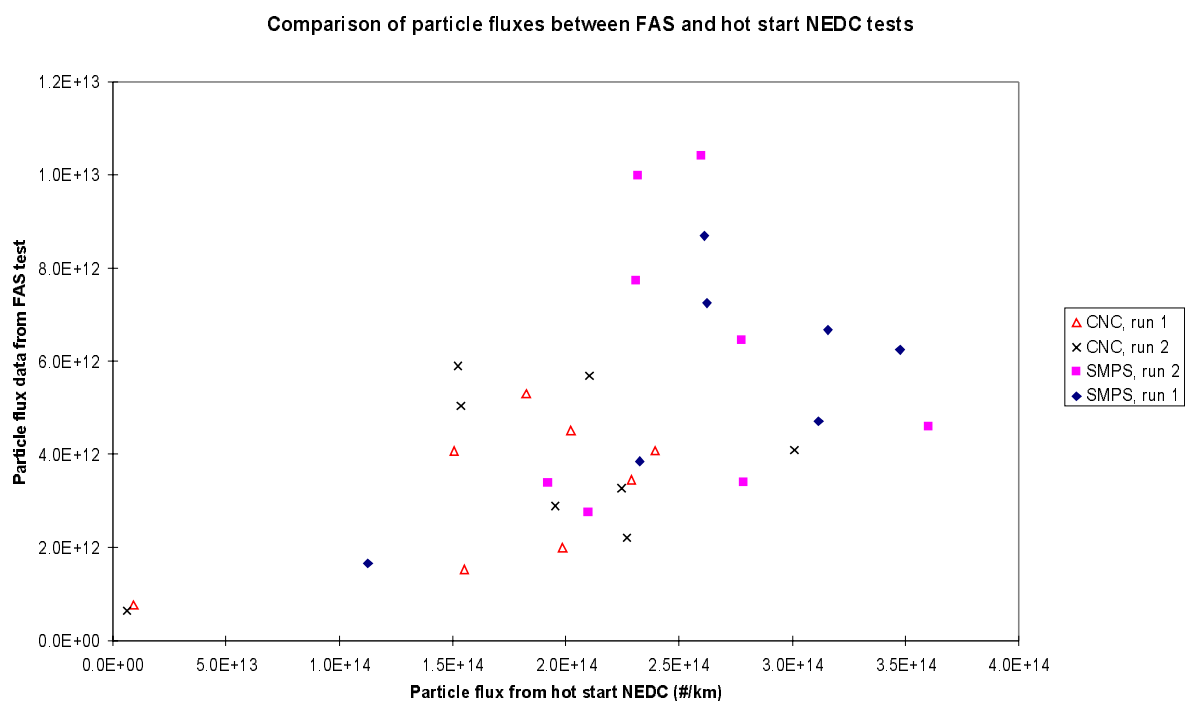
**Figure 76.**



**Figure 77.**



**Figure 78.**



**Figure 79.**

