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Paper: Welding diagnostics by means of particle swarm optimization and feature selection

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Abstract: In a previous contribution, a welding diagnostics approach based on plasma optical spectroscopy was presented. It consisted of the employment of optimization algorithms and synthetic spectra to obtain the participation profiles of the species participating in the plasma. A modification of the model is discussed here: on the one hand the controlled random search algorithm has been substituted by a particle swarm optimization implementation. On the other hand a feature selection stage has been included to determine those spectral windows where the optimization process will take place. Both experimental and field tests will be shown to illustrate the performance of the solution that improves the results of the previous work.