

## Project Idea Industry 4.0 for Plasma Processes:

### Plasma Diagnostics for Plasma Processes 4.0 (project acronym: PDP 4.0)

#### Project Goals:

- Initial feasibility analysis using an exemplary plasma process to systemize measurable parameters that reveal correlations of process data, in-situ plasma diagnostics data, and layer properties
- Basis for larger projects (e.g. funded collaborative project) of the partners involved

#### Motivation:

- Use of plasma diagnostics methods in coating processes and associated opportunities to increase reproducibility, efficiency and flexibility in industrial production

#### Further Goals:

- Identify methods to obtain data correlations for process chain monitoring
- Correlation of the layer properties data with the process and plasma diagnostics data by artificial intelligence methods for respective application areas
- Feedback of application behaviour of coated components on manufacturing processes, such as coating processes
- Industrial implementation of the digitization of plasma processes within the overall process chain

#### Contents of the Feasibility Project:

- Definition of the exemplary plasma process and the process parameters (metal/metal gradients/a-C:H coatings with different processes on an industrial plant at Fraunhofer IST), which should/could be collected (plant data, diagnostic data, coating data, ...)
- Determination of data acquisition and data storage (formats, time stamps, Excel/database, ...)
- Installation and commissioning of the measurement data acquisition systems at the Fraunhofer IST
- Execution of a certain number of processes with the same and deviating parameters with complete data acquisition at the Fraunhofer IST
- Preparation of the collected data for a review in a presentation and assessment
- Evaluation of the project and outline of a funding project.

#### General project information:

- Project duration: 6 months
- Project contribution per partner: € 9,000 plus VAT.
- Scope of work depending on participation
- Minimum number of participants: 5
- IP regulation: cooperation agreement
- Scientific partner: Fraunhofer IST
- Coordination: Competence Network Industrial Plasma Surface Technology INPLAS e.V. in close cooperation with Fraunhofer IST



#### Advantages of the INPLAS joint project concept:

- Targeted, fast, independent
- Uncomplicated entry
- Fast realization
- Minimum effort
- Flexibility
- No publication requirement
- Ideal preliminary projects for industrial implementation and/or project funding

#### Status of the reconciliation in the network:

Coordination meeting with interested partners took place on 04 March 2021