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Public Summary

The original scope of the project task focused on linking production equipment through an automated transport concept. As the required equipment was not fully available for integration within the planned pilot-line environment, the original task could not be implemented as initially foreseen. Following agreement within the project, the scope was therefore adapted to address a relevant automation need identified during practical module production activities.

During the manufacture of matrix shingle demonstrators, selected layup and cross-connection steps were carried out manually. In particular, the application of insulating labels and electrically conductive adhesive required precise and time-consuming manual handling. At the same time, existing laboratory infrastructure provided a suitable basis for developing a flexible automation solution with a focused and practical scope.

The Nexus tool was therefore conceived as a laboratory-scale platform for the partial automation of these processes. It combines a programmable three-axis handling system with process tools for the accurate placement of labels and the controlled application of electrically conductive adhesive. The system is designed to accommodate different substrate formats and process layouts, making it suitable for research, development and pilot-scale manufacturing activities. Within the project period, the machine was designed and its base frame and gantry were pre-assembled; final assembly and commissioning by M10 at Fraunhofer ISE will follow after the project end.

By improving the repeatability and consistency of selected cross-connection steps, Nexus supports the further development of matrix shingle module technologies. The tool also provides a flexible basis for evaluating automated process concepts and for transferring successful laboratory procedures towards more scalable manufacturing solutions.

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Project partners:

#	Partner short name	Partner Full Name
1	VOL	VOLTEC SOLAR
2	ETW	ETWAY S.R.L.
3	HLP	HELIUP
4	M10	M10 INDUSTRIES AG
5	UNR	UNIRESEARCH BV
6	Fraunhofer	FRAUNHOFER GESELLSCHAFT ZUR FORDERUNG DER ANGEWANDTEN FORSCHUNG EV
7	ICARES	ICARES CONSULTING
7.1	BI	BECQUEREL INSTITUTE FRANCE
8	CEA	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
9	FSUNS	Freesuns SA
10	CSEM	CSEM CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DEVELOPPEMENT
11	EPFL	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE
12	SOP	SOPREMA

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