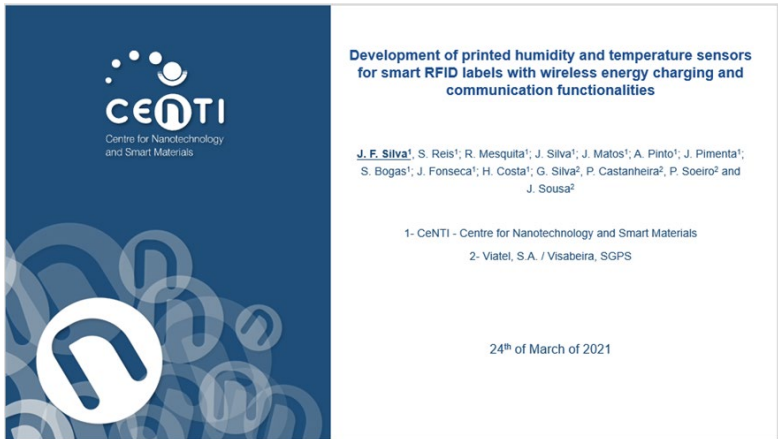
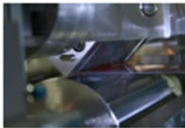
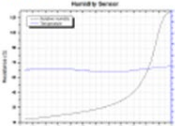
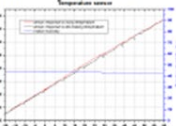
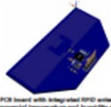
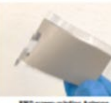
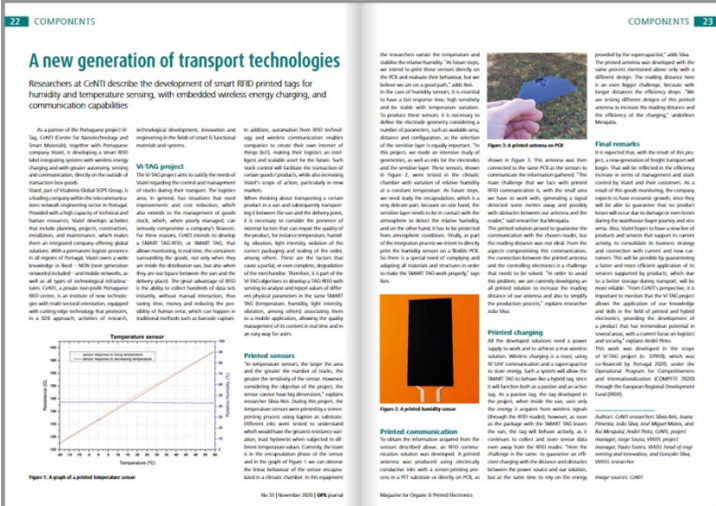


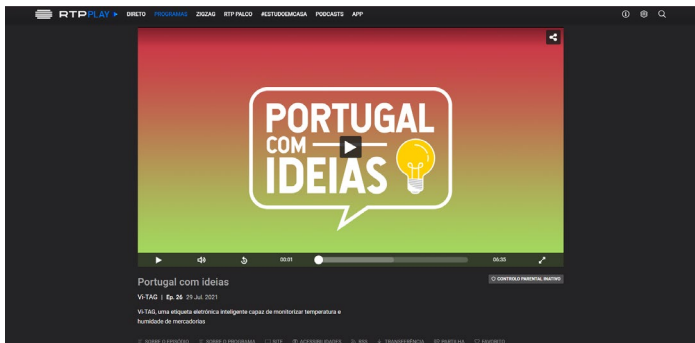
AÇÕES DE DIVULGAÇÃO

Ação de divulgação	Comunicação oral
Local e Data	LOPEC 21, 23-25 de março de 2021
Formas de divulgação	- <i>Comunicação oral via online</i>
Evidências	
Ação de divulgação	Comunicação oral
Local e Data	INNOLAE 21, 24-25 de fevereiro de 2021
Formas de divulgação	- <i>Comunicação oral do poster via online</i>

Evidências	Development of printed humidity and temperature sensors for smart RFID labels with wireless energy charging and communication functionalities S. Reis¹; R. Mesquita¹; J. Silva¹; A. Pinto¹; S. Bogas¹; J. Matos¹; J. Pimenta¹; J. Fonseca¹; H. Costa¹; G. Silva²; P. Marques²; P. Castanheira²; P. Soeiro²; J. Sousa² ¹ CeNTI - Centre for Nanotechnology and Smart Materials R. Fernando Mesquita, 2785, 4760-034 V. N. Famalicão, Portugal ² Viatel, S.A. / Viseira, SGPS Rua do Palácio do Gelo, nº1, Palácio do Gelo Shopping, piso 3, 3500-606 Viseu, Portugal Abstract Monitoring and sensing goods is demanded to access their conditions. This work is focussed on the development of printed RFID antennas, and Temperature and Humidity sensors, which are used for collecting information about the surrounding environment of packages. The antennas and sensors were processed using a combination of different screen-printing and wet coating technologies using several substrates for subsequent integration by lamination to produce a full smart RFID TAG. The smart RFID label was integrated with systems having wireless energy charging and greater autonomy, sensing and communication, directly on the outside of the transaction box goods, where the data is sent to the company's stock management software. The present study describes the manufacturing and morphological and electrical characterization of printed Temperature and Humidity sensors exposed to different environments and atmospheric conditions. Motivation and Purpose The present work is being developed under the Vi-Tag project that aims the development of fully customized and bespoke solutions to the logistics and transport sectors, by integrating wireless sensing/monitoring technologies, based in printed and integrated electronics systems, coupled with wireless communication capabilities, into box storage structures and other handling equipment. The objective is to create a solution that is adaptable to different environments (inside and outside the distribution van) and production units, ensuring that it does not negatively interfere with production activities, but rather as a boost for greater fluidity of service. Facilities and Equipment  Screen printing  Smartcoater  Microflex Results Humidity Sensor  Humidity sensor printed on a flexible substrate by screen-printing Validation tests: • RH (30 to 90)% • T (19 to 20)°C  Humidity sensor Temperature Sensor  Temperature sensor printed on a flexible substrate by screen-printing Validation tests: • RH (40 to 50)% • T (-20 to 60)°C  Temperature sensor RFID Tags  RFID antenna with integrated RFID antenna, commercial temperature and humidity sensors  RFID screen-printing Antenna Final Remarks To scale up the process, it is intended to print the final Temperature and Humidity sensors with roll-to-roll techniques using microflex and/or smartcoater equipment, depending on the final approach. Main specifications regarding the sensors: ! sensitivity, reproducibility, durability; ! hysteresis, cost; Acknowledgment With an overall investment of 465.663,81 €, this project is co-financed under Portugal 2020 program, under the Operational Program for Competitiveness and Internationalization (COMPETE 2020), in the amount of 301.663,81 €, from European Regional Development Fund. Vi-TAG project will last for 3.5 years, from June 2018 to November 2021, with VIATEL - Tecnologia de Comunicações, S.A. as promoter, and CeNTI as partner.
Ação de divulgação	Comunicação oral
Local e Data	ISFOE20 (Grécia), 8 de julho de 2020
Formas de divulgação	-Comunicação oral via online “Development of smart RFID Printed Tags for humidity and temperature sensing, with embedded wireless energy charging, and communication capabilities”

Evidências	 Development of smart RFID Printed Tags for humidity and temperature sensing, with embedded wireless energy charging, and communication capabilities J. Pimenta¹, S. Reis¹, J. Perdigoto¹, R. Mesquita¹, J. M. Silva¹, J. Silva¹, A. Pinto¹, H. Costa¹, M. Ribeiro¹, A. Martins², G. Silva², P. Castanheira², P. Seiro² and J. Sousa² 1- CeNTI - Centre for Nanotechnology and Smart Materials 2- Viatel, S.A. / Visabeira, SGPS 8th of July of 2020  
Ação de divulgação	Comunicação oral
Local e Data	Productronica (Munique, Alemanha), 13 de novembro de 2019
Formas de divulgação	-Comunicação oral <i>“Printed and embedded systems for smart RFID labels with wireless energy charging”</i>
Evidências	  productronica Accelerating Innovation November 16-19, 2021 Messe München Trade fair Exhibitors Visitors Press Program Welcome page > Program > Events calendar > Result > Printed and embedded systems for smart RFID labels Back Printed and embedded systems for smart RFID labels with wireless energy charging NOV 13 2019 Innovation Forum > Printed Electronics Insights: Smart Living 14:40-15:00 h Hall E2 Innovation Forum, B2, booth 441 Subjects: Organic and printed electronics Speaker: Roberto Laranjeira (CeNTI - Centre for Nanotechnology & Smart Materials) Type: Lecture Company: OE-A (Organic and Printed Electronics Association) Speech: English Download
Ação de divulgação	Apresentação do projeto
Local e Data	Productronica (Coimbra, Portugal), 9 de novembro de 2018
Formas de divulgação	- <i>Apresentação no evento “INDUSTRIAL IMPULSE”</i>

Evidências	
Ação de divulgação	Jornal OPE “Organic and Printed Electronics”
Local e Data	Novembro 2020
Formas de divulgação	- Publicação do artigo sobre o projeto, com o título “A new generation of transport technologies”
Evidências	
Ação de divulgação	Newsletter CENTI
Local e Data	Julho 2021
Formas de divulgação	-Publicação na Newsletter

Evidências	
Ação de divulgação	Entrevista “Portugal com Ideias – RDP Internacional”
Local e Data	Julho 2021
Formas de divulgação	Entrevista na rádio – “Vi-TAG, uma etiqueta eletrónica inteligente capaz de monitorizar temperatura e humidade de mercadorias”
Evidências	https://www.rtp.pt/play/p3519/portugal-com-ideias 

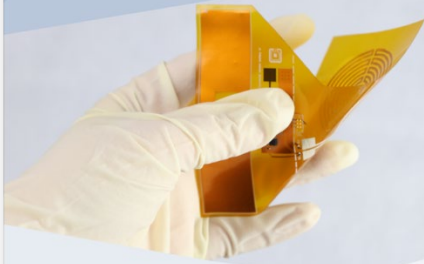
MATERIAL GRÁFICO

Roll-up / Flyer / Poster Científico:

-Flyer



ETIQUETAS INTELIGENTES



MONITORIZAÇÃO EM TEMPO-REAL

- Tecnologia de ponta;
- Controla as condições do transporte;
- Sensores impressos, flexíveis e de baixo custo;
- Monitoriza parâmetros como humidade, temperatura e localização.



Etiqueta autónoma, com capacidade de recolha de energia na utilização e compatibilidade com o sistema de alimentação sem fios.



Monitorização de dados através da aplicação: consulta e gestão do processo de transporte, desde o armazém até ao destino.



Tecnologia RFID para comunicação de dados capaz de alimentar sistemas de baixo consumo energético.



Qualidade, segurança e integridade dos **produtos em mobilidade assegurados**.



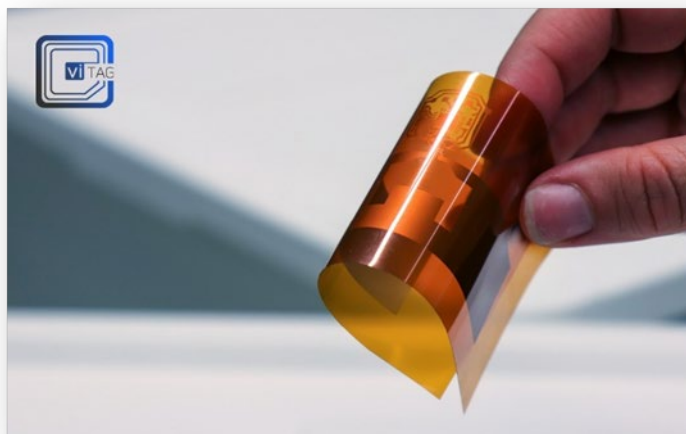
Hardware inovador que assegura o armazenamento de energia e um sistema de **carregamento sem fios**.



-Video Promocional: <https://www.youtube.com/watch?v=Q43pXaLoDv4>

ESPECIFICAÇÕES TÉCNICAS PROTÓTIPO / DEMONSTRADOR

PROTÓTIPO / DEMONSTRADOR



PROVA DE CONCEITO

