



EN



# POTENTIAL



YOUR CHEMISTRY HAS POTENTIAL

## Introduction

/// ElectraSyn 2.0

In a unique endeavor, IKA owner René Stiegelmann has partnered up with Professor Phil S. Baran of the world-renowned Scripps Research Institute in La Jolla, California (USA). Over the past three years, engineers and chemists have worked hand in hand to develop a product combining two divisions of chemistry communities: the Electrochemical and the mainstream Synthetic Organic Chemistry Communities that traditionally don't have much in common.

"The culmination of years of research at the crossroads of engineering and synthesis", as Phil Baran describes the development of a new product that has its developmental origins dating back to an apparatus patented and developed by IKA in the 1920s. ElectraSyn 2.0 combines three products in one and will facilitate the mass adoption of electrochemistry for preparative organic synthesis. Society is always positively impacted by the development of sustainable reaction procedures that generate high yields, require less chemical reagents and thus produce less chemical waste. Synthetic organic electrochemistry is an innately sustainable and environmentally friendly field whose widespread adoption has been primarily limited by gaps in engineering rather than desire or potential.

**For further reading, see:**

1. Moeller, K. D. Synthetic Applications of Anodic Electrochemistry. *Tetrahedron* 2000, 56, 9527–9554.
2. Francke, R.; Little, R. D. Redox Catalysis in Organic Electrosynthesis: Basic Principles and Recent Developments. *Chem. Soc. Rev.* 2014, 43, 2492–2521.
3. Yoshida, J.; Kataoka, K.; Horcajada, R.; Nagaki, A. Modern Strategies in Electroorganic Synthesis. *Chem. Rev.* 2008, 108, 2265–2299.
4. Horn, E. J.; Rosen, B. R.; Baran, P. S. Synthetic Organic Electrochemistry: an Enabling and Innately Sustainable Method. *ACS Cent. Sci.* 2016, 2, 302–308.

6

/// PACKAGES

6

/// THREE PRODUCTS IN ONE

21

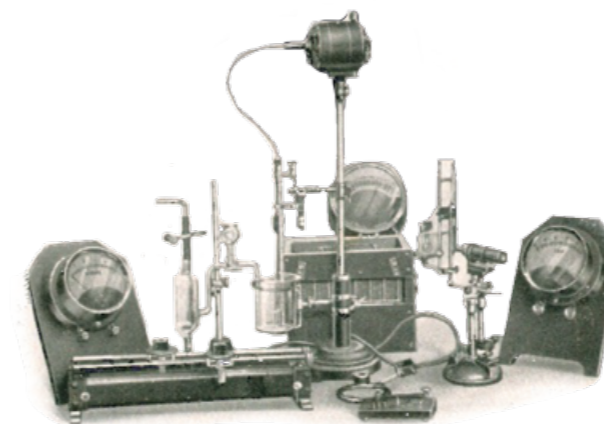
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/// IKA SERVICE



The Beginnings: Apparatus for electrolysis with stirring standmotors and regulating starters for the rotating electrodes (electrochemical method)

THE CULMINATION OF YEARS OF RESEARCH  
AT THE CROSSROADS OF ENGINEERING AND SYNTHESIS.

PHIL BARAN



# What is ElectraSyn 2.0?

/// 3 devices in 1

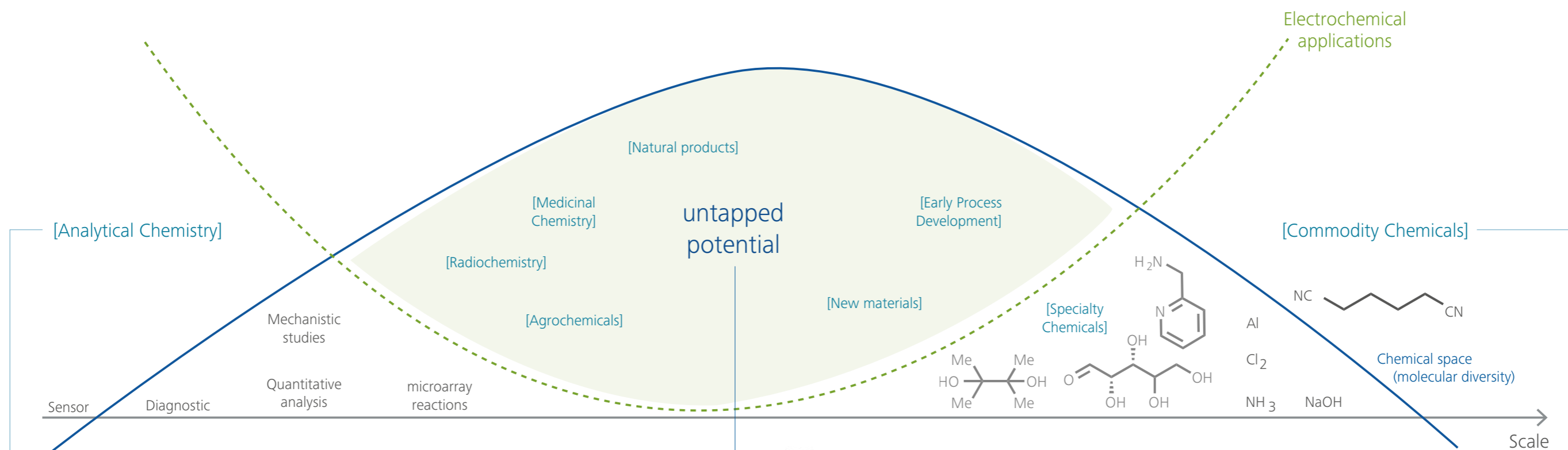


A potentiostat, an analytical device and a stir plate in one:  
ElectraSyn 2.0 with lifetime warranty

# ElectraSyn 2.0

/// Who is it for?

Discovery scale synthetic organic chemistry: medicines, materials, agrochemicals, natural products, and more.



## ElectraSyn 2.0

/// Ready To Go package

This Ready To Go package contains everything you need for your first electrochemical experiment: a potentiostat, a 10 ml glass vial, a holder for the glass vial, a stirring attachment (aluminum) and a set of electrodes (graphite).

This modular equipment concept is ideal for countless different set-ups.

### ElectraSyn 2.0

Ready To Go package

- › ElectraSyn 2.0 base unit
- + vial holder
- + single vial, 10 ml, complete
- + 2 electrodes (graphite)
- + stir plate (aluminum)
- + stir bar

Ident. No. 0020008980

€ 1.749,00



PATENT PENDING

## ElectraSyn 2.0 pro

/// CV package

### ElectraSyn 2.0 pro

CV package

- › ElectraSyn 2.0 base unit
- + vial holder
- + single vial, 10 ml, complete
- + 2 electrodes (graphite)
- + stir plate (aluminum)
- + stir bar
- + set of CV electrodes:
  - + CV glassy carbon
  - + CV Platinum
  - + reference electrode Ag / AgCl

Ident. No. 0040003261

€ 2.499,00





## STANDARDIZATION /// REPRODUCIBLE RESULTS



DOZENS OF  
AVAILABLE ELECTRODES

PREVIOUSLY ANECDOTAL  
AND BALKANIZED,  
ELECTROCHEMICAL  
EXPERIMENTS CAN NOW  
BE FULLY STANDARDIZED  
FOR ROBUST, GLOBAL  
REPRODUCIBILITY

Graphite SK-50 electrode, 12 pcs.  
*Ident. No. 0040002858*  
**€ 138,00**

Glassy Carbon electrode, 2 pcs.  
*Ident. No. 0040002842*  
**€ 103,00**

Lead bronze electrode, 12 pcs.  
*Ident. No. 0020016076*  
**€ 235,00**

Lead electrode, 12 pcs.  
*Ident. No. 0040002843*  
**€ 259,00**

Tungsten electrode, 12 pcs.  
*Ident. No. 0040002845*  
**€ 263,00**

Niobium electrode, 12 pcs.  
*Ident. No. 0040002846*  
**€ 73,00**

Copper electrode, 12 pcs.  
*Ident. No. 0040002847*  
**€ 72,00**

Magnesium electrode, 12 pcs.  
*Ident. No. 0040002848*  
**€ 253,00**

Titanium (grade 2) electrode, 12 pcs.  
*Ident. No. 0040002849*  
**€ 235,00**

Zinc electrode, 12 pcs.  
*Ident. No. 0040002850*  
**€ 235,00**

Stainless Steel electrode, 12 pcs.  
*Ident. No. 0040002851*  
**€ 63,00**

Platinum Plated electrode, 2 pcs.  
*Ident. No. 0040002852*  
**€ 89,00**

Gold Plated electrode, 2 pcs.  
*Ident. No. 0040002853*  
**€ 237,00**

Silver Plated electrode, 2 pcs.  
*Ident. No. 0040002854*  
**€ 44,00**

Aluminum electrode, 12 pcs.  
*Ident. No. 0040003174*  
**€ 63,00**

Boron Doped Diamond electrode, 2 pcs.  
*Ident. No. 0040002856*  
**€ 410,00**

Tin electrode, 12 pcs.  
*Ident. No. 0040002857*  
**€ 247,00**

Nickel electrode, 12 pcs.  
*Ident. No. 0040002859*  
**€ 73,00**

RVC electrode, 12 pcs.  
*Ident. No. 0040002860*  
**On request**

Nickel Foam electrode, 12 pcs.  
*Ident. No. 0040002861*  
**On request**

Cobalt electrode, 2 pcs.  
*Ident. No. 0040003385*  
**On request**

Reference electrodes  
*Ident. No. 0040002865*  
**€ 98,00**



NUMEROUS VIAL SIZES  
1 ML, 2 ML, 5 ML, 10 ML, 20 ML

DEFINING  
INDUSTRY  
STANDARD  
AID IN COMMUNITY  
WIDE REPRODUCIBILITY  
OF ELECTROCHEMISTRY

1 ml vial complete  
*coming soon*

2 ml vial complete  
*coming soon*

5 ml vial complete  
*Ident. No. 0040003171*  
**€ 104,00**

10 ml vial complete  
*Ident. No. 0040003170*  
**€ 97,00**

20 ml vial complete  
*Ident. No. 0040003168*  
**€ 98,00**

 ANALYTICAL CAPABILITIES



**Technical data**

Voltage reading accuracy	± 16 mV
Current reading accuracy	± 6,2 µA
Minimum voltage step	10 mV



CYCLIC  
VOLTAMMETRY  
(CV)

ANALYTICAL MEASUREMENTS  
AND PREPARATIVE EXPERI-  
MENTS ON THE SAME DEVICE

CV DATA THAT  
IS EXPORTABLE

TO YOUR COMPUTER,  
VIEWABLE ON YOUR PHONE,  
OR EVEN ELECTRASYN WITH  
ITS BEAUTIFUL SCREEN.



## MODULARITY



ALL KNOWN MODES OF ELECTROCHEMISTRY ARE USABLE AND WITHIN REACH DIVIDED CELL CHEMISTRY CAN BE DONE

Cell type / condition	divided	undivided
constant current (A)	oxidation	oxidation
	reduction	reduction
constant potential (V)	oxidation	oxidation
	reduction	reduction

## USER INTERFACE

Never run an electrochemical reaction before? The "Smart Assist" mode will analyze your reaction before running in order to give you a baseline starting point for electrochemical conditions.



ELECTRASYN IS SMART AND COMMUNICATES WITH YOUR REACTION TO HELP YOU

ADVANCED MODE FOR ELECTROCHEMICAL GURUS

USER-FRIENDLY, INTUITIVE AND AESTHETIC INTERFACE FOR RAPID ADOPTION OF ELECTROCHEMISTRY

STIRRING ABILITIES



CLASSIC  
IKA PLATE  
BUILT IN

INDUSTRY  
LEADING  
AND PROVEN STIRRING  
TECHNOLOGY

ALNICO MAGNET  
TECHNOLOGY,  
FOR EXCELLENT TEMPERA-  
TURE STABILITY AND HIGH  
RESIDUAL INDUCTION

FUTURE PROOFING



A DEVICE THAT  
IMPROVES  
OVER TIME  
WITH FIRMWARE  
UPDATES VIA USB

WILL STAND THE  
TEST OF TIME AND  
IMPROVE  
WITH IT



## DISPLAY

INDUSTRY LEADING AND CHEMICAL RESISTANT OPERATION SURFACE

INTEGRATION OF HIGHLY SENSITIVE CAPACITIVE-TOUCH-ELEMENTS – COMFORTABLE AND EASY OPERATION

INCREDIBLE DISPLAY TRANSPARENCY COMPARED TO OTHER TRADITIONAL DISPLAY MATERIALS

TOUGH AND SCRATCH-RESISTANT GLASS SURFACE (HARDNESS UP TO 7H)\*

SMOOTH AND EASY-TO-CLEAN

\*if strong force is applied, the glass will break, not impacting user safety by shattering or splintering



## DESIGN

HARDENED GLASS ENCLOSED, FAST RESPONSE DISPLAY FOR MAXIMUM VISIBILITY AND CHEMICAL RESISTANCE

INDUSTRIAL, BEAUTIFUL, HIGH-QUALITY MATERIAL

DESIGNED IN CALIFORNIA AND BUILT IN THE USA



# CONNECTIVITY



USB PORT



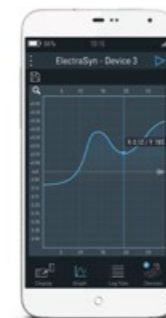
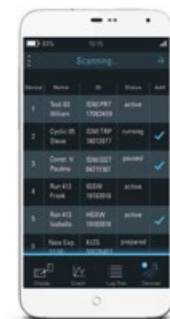
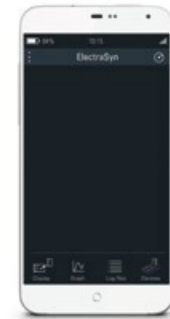
WIFI



BLUETOOTH

# ELECTRASYN 2.0 APP

COMING SOON





## EASE OF TRANSPORTATION



COMES WITH A  
CARRYING CASE

## Technical Data

/// An overview

### Potentiostat

Nominal voltage ( input)	48 VCD
Max. current (input)	1.500 mA
Max. input power	40 W
Voltage output	30 / 10 V
Current output	100 mA
EC-Motor rating output	9 W
Speed range	50 – 400 – 1.500 rpm
Setting accuracy speed	10 rpm
Stirring quantity max. per stirring position (H <sub>2</sub> O)	100 ml
Stirring bar length	10 mm
Operation elements	Capacitive touch / Turning knob
Speed control	Turning knob
Display	TFT
Analog output	no
RS 232 interface	no
USB interface	yes
IP rating	IP 40
Permissible ambient temperature	+5 – +40 °C
Permissible relative humidity	80 %
Dimensions incl. single-vial Adapter (W x H x D)	130 x 150 x 250 mm
Weight	1,4 kg

### Power supply

Input	100 – 240 VAC 1,5 A 50 – 60 Hz
Output	48 VCD 39,84 W LPS (limited power source)
Protection class	II (double insulated)

## Scale up

### /// ElectraSyn flow

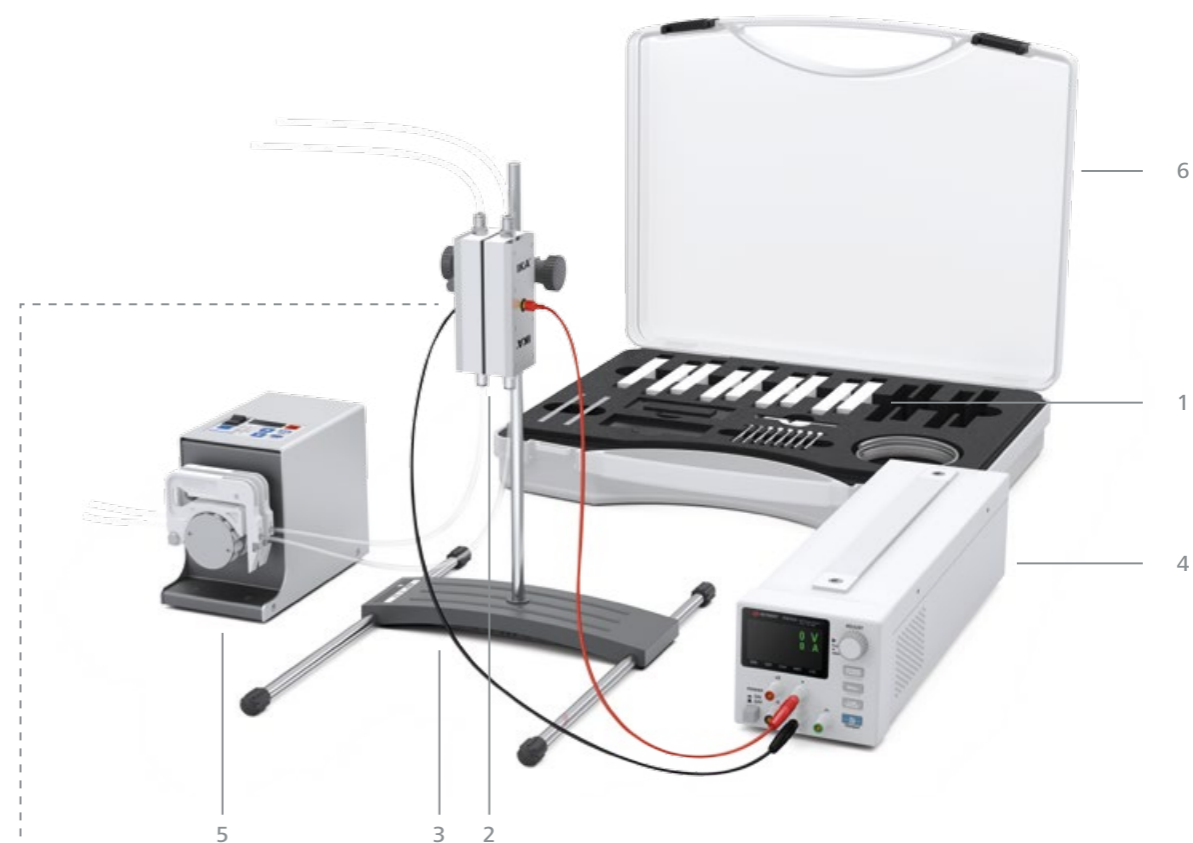
ElectraSyn flow basic is a system for continuous flow electroynthesis. The heart of this system is the electroynthesis flow cell – in short, ElectraSyn flow. It consists of two half cells, each equipped with an electrode. By combining similar and dissimilar half cells / electrodes, ElectraSyn flow provides maximum flexibility for research in the field of electroynthesis. It also enables the laboratory scale production of a variety of products using electroynthesis.



**ElectraSyn flow basic and  
ElectraSyn flow eco**

Ident. No. 0020014266 |  
Ident. No. 0020014267

**€ 9,200.00 |**  
**€ 6,700.00**



#### PACKAGE INCLUDES

- 1 Nine half cells with accessories.
- 2 One nafion-membrane for cell splitting.
- 3 R 104 stand with cell holder and H44 boss head clamp.
- 4 Power supply adapter with cords.
- 5 Peristaltic pump with tubing.\*
- 6 Practical carrying / storage case for small components.

#### Continuously adjustable power supply

Voltage	0 – 35 V (± 6 mV)
Current	0 – 1 A (± 50 µA)
Mains voltage	100, 115 or 230 V (50 Hz / 60Hz)

#### Peristaltic pump

Flow rate per tube	0,01 – 0,61 ml/min
Overall flow rate	0,02 – 1,22 ml/min
Inner tubing diameter	0,25 mm
Mains voltage	100 – 230 V (50 Hz / 60 Hz)

## Customizing Center

It is important that IKA products perform in real laboratory applications. We have a special program of product solutions that are customized to your individual needs. If you cannot find the right device in our standard product range, please send us the details of the specification you need using the online form. Our team will check the feasibility of the specification and offer you a solution.

Please visit [www.ika.com/en](http://www.ika.com/en) to have look at the product modification requests that we have already implemented.

## Worldwide service network

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Our dedicated team of engineers provides comprehensive technical service on a global level. If you have any questions, please do not hesitate to contact IKA directly. Alternatively, you can get in touch with your dealer.

IKA guarantees that spare parts will be available for 10 years. In the event of any faults with a device, or if you have any technical questions regarding our products, their maintenance or replacement parts, please call us at **00 8000 4524357** (00 8000 IKAHELP) or send an eMail to [service@ika.de](mailto:service@ika.de)

## IKA Application Support

Our Application Center spans 400 m<sup>2</sup> and is equipped with the most modern facilities for presenting and testing laboratory equipment and processes. The Center brings us even closer to our customers and improves our service. If you are interested, you can use our facilities to test processes that include stirring, shaking, dispersing, grinding, heating, analysis and distillation.

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**Send us your sample.** We will run a test with the suitable device - within 48 hours.



We would be happy to help you find the **perfect device** for your application.



Interested individuals and customers can **test processes** including stirring, shaking, dispersing, milling, heating, analyzing and distilling.

MORE THAN HALF A CENTURY IN THE MAKING.

ElectraSyn 2.0 on [www.ika.com/en](http://www.ika.com/en)

# PATENT

For:  U.S. and/or  Foreign Rights  
For:  U.S. Application;  
 U.S. Provisional Application;  
 U.S. Patent; or  
By:  PCT Application  
 Inventors or  Present Owners

## ASSIGNMENT OF INVENTION

In consideration of the payment by ASSIGNEE to ASSIGNOR of the sum of One Dollar (\$1.00), the receipt of which is hereby acknowledged, and for other good and valuable consideration,

ASSIGNORS: (inventor(s) or person(s) or entity(ies) who own the invention)

Phil S. Baran

Evan Horn

Dirk Waldmann







EN

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/// SOCIAL MEDIA



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made by IKA Works

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Prices exclude taxes and other sales related fees.