

# Our world is plasma

Discover the fascinating opportunities for your enterprise



Das Greifswalder Innovationsmodell

# INP Greifswald in Zahlen

## Gebäude (Neubau 1999)

Nutzfläche 3.700 m<sup>2</sup>

130 Arbeitsplätze

37 Labore

Erweiterungsbau  
540m<sup>2</sup> (8 Labore)



## Umsatz (2009)

Drittmittel  
5,6 Mio. €

Umsatz 2009  
11,8 Mio. €



## Mitarbeiter (2010)

180 Beschäftigte (April 2010)

Wissenschaftler 86

Techniker 37

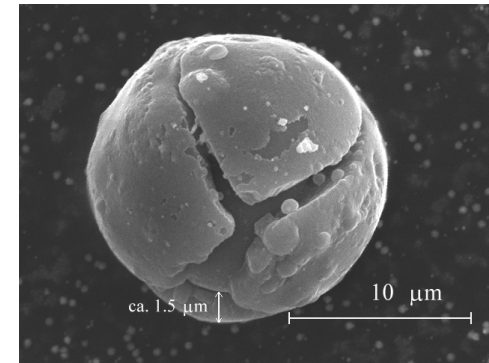
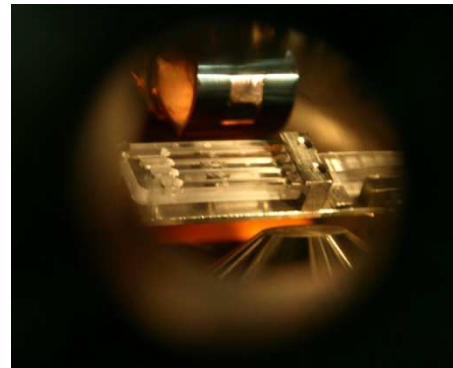
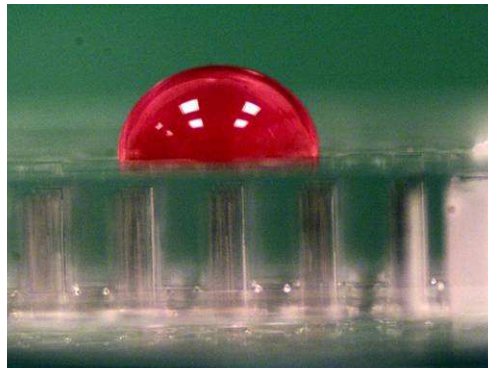
Verwaltung/Infrastruktur 26

Hilfskräfte/Azubi's 31



Leitung: Dr. Brüser

FS Oberflächen (Dr. Foest), FS Materialien (Dr. Brüser)

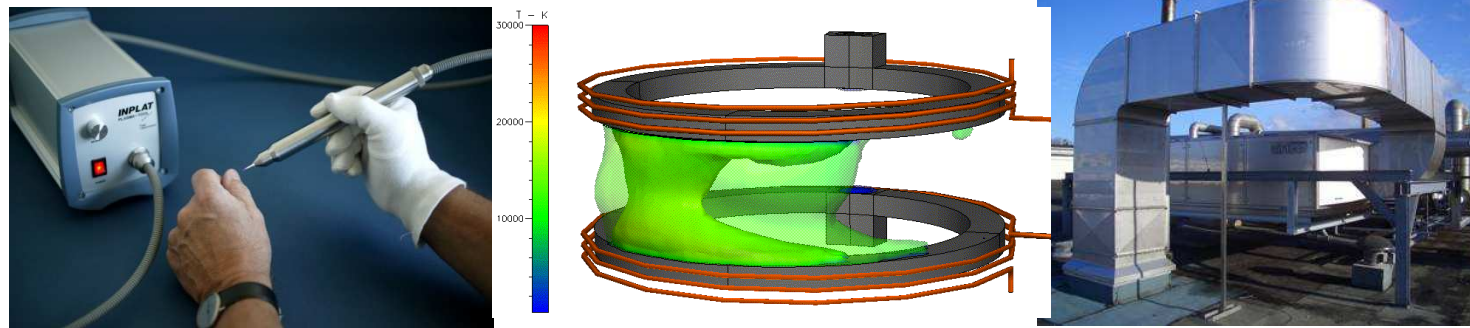


- Gezielte plasmachemische Oberflächenfunktionalisierung
- Funktionelle Schichten durch PE-CVD Prozesse
- Plasmagestützte Verbesserung der Oberflächen-Biokompatibilität
- Entwicklung neuer Materialien durch die Modifizierung von Pulvern,
- Plasmabehandlung von Kohlestofffasern und Nanoröhren zur verbesserten Einbindung in Kompositwerkstoffe

Leitung: Prof. Dr. Schoenemann

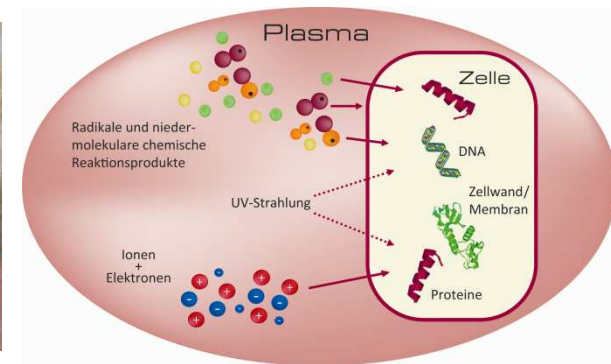
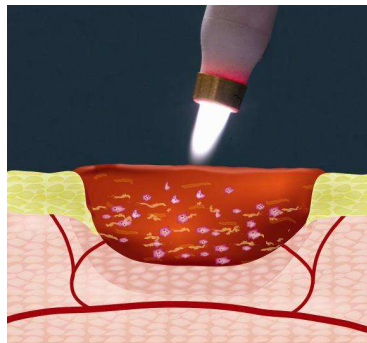
FS Umwelt (Prof. Dr. Röpcke), FS Energie (Dr. Uhrlandt)

FS Schadstoffabbau (Dr. Brandenburg)



- Behandlung von Aerosolen und Gerüchen, Dieselpartikelfilter
- Abbau von flüchtigen organischen Substanzen (VOC)
- Überwachung und Steuerung von Plasmaprozessen (Prozesseffektivität und -sicherheit)
- HID-Lampen, Schalt- und Schweisslichtbögen (Modellierung)
- Mikroplasma für Oberflächenbearbeitung unter Normaldruck

Leitung: Prof. Dr. Weltmann  
FS Experimentelle Plasmamedizin (Prof. Dr. von Woedtke),  
FS Plasmadekontamination (Dr. Ehlbeck), FS Bioelectrics (Prof. Dr. Kolb)



- Quellenentwicklung zur Dekontamination unter Normaldruck
- Grundlagenforschung zur Plasmareinigung und Antiseptik z.B. an der Wundoberfläche
- Untersuchungen zur Wechselwirkung Plasma und Zelle
- Untersuchungen zur Wirkung von Plasmen auf Mikroorganismen

Hinweis: Allein in Deutschland leben 4,5 – 5 Millionen Menschen mit schlecht heilenden chronischen Wunden

z.B. Offenes Bein / diabetisches Fußsyndrom / Verbrennungswunden



# Greifswalder Modell



FROM PROTOTYPE TO PRODUCT

<b>Forschung</b>	<b>Entwicklung</b>		<b>Produktion &amp; Vertrieb</b>	
Wertschöpfungskette				
<ul style="list-style-type: none"> <li>■ Angewandte Plasmaforschung</li> <li>■ Technologietransfer wird angestrebt</li> </ul>	<ul style="list-style-type: none"> <li>■ Prüfung der FuE-Ergebnisse auf wirtschaftliche Verwertbarkeit</li> <li>■ Optimierung von Kosten-Nutzen-Aspekten durch Ingenieurdienstleistungen</li> </ul>	<ul style="list-style-type: none"> <li>■ Bau von Prototypen auf Basis der Weiterentwicklung</li> <li>■ Kontinuierliche Erhöhung der Produktreife</li> </ul>	<ul style="list-style-type: none"> <li>■ Fertigung und Verkauf von marktreifen Kleinserien (Markterschließung)</li> </ul>	<ul style="list-style-type: none"> <li>■ Produktion und Vertrieb von (Groß-)Serien durch eigenständige Gesellschaften (vollständiger Markteintritt)</li> </ul>
<div style="display: flex; justify-content: space-between;"> <div data-bbox="645 1074 958 1101"> <b>Technologiemanagement:</b> <ul style="list-style-type: none"> <li>• EU-Antragsverfahren, Koordination von EU-, Bundes- und Landesprojekten</li> <li>• Marktanalysen, Vor- und Machbarkeitsstudien</li> <li>• Training und Schulungen (u. a. Projektmanagement, Strategieentwicklung)</li> </ul> </div> <div data-bbox="645 1195 922 1222"> <b>Technologiemarketing:</b> <ul style="list-style-type: none"> <li>• Corporate Design, Branding, Markenkonzeption</li> <li>• Fotografien, Broschüren, Plakate, Flyer, Kataloge, Messeauftritte, PR-Arbeit</li> </ul> </div> </div>				

neoplas GmbH - gegründet am 29. November 2005

## **Fokus**

Verwertung naturwissenschaftlicher Forschung

## **Greifbarer Technologie - Transfer**

Technologieentwicklung und Inkubation, Prototypenbau / Kleinserie, Konstruktionsleistungen, Software, Tech. Service

## **Effizientes Technologie - Management**

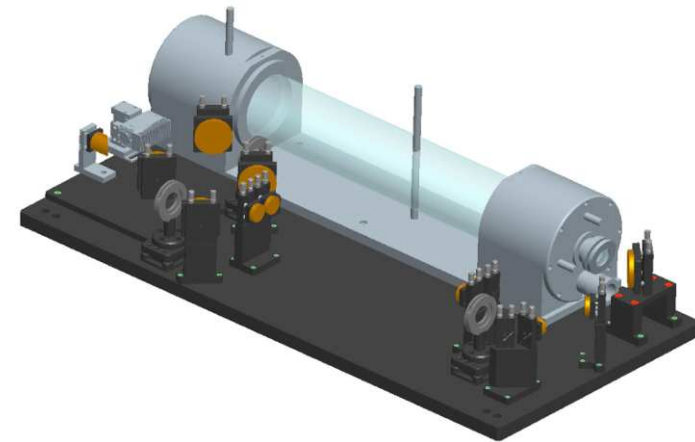
(EU)-Projektmanagement und Akquise, Marktanalyse, Beratung, Netzwerke & Konsortien

## **Sichtbares Technologie - Marketing**

Forschungsmarketing, PR-Materialien, Flyer, Konferenzen, Messen

FROM PROTOTYPE TO PRODUCT

- CAD – Konstruktionen (2D und 3D)
- Geräteentwicklung  
(inkl. Software, Antriebe, elektr. & mechanische Anschlüsse, abnahmepflichtige Druckbehälter)
- Prototypenbau / Kleinserie





FROM PROTOTYPE TO PRODUCT

- Oberflächenanalysen  
(z. B. AFM-, XPS-, FT-IR, EM)
- Lichttechnische Analysen
- Plasmadiagnostiken
- Plasmamodellierungen
- Pulverbeschichtungen
- Oberflächenveredelungen



FROM PROTOTYPE TO PRODUCT

- Nationales und internationales Projektmanagement (BMBF, EU etc.)
- Beratung zu internationaler & nationaler Projektentwicklung
- Netzwerkmanagement
- Marktanalysen



## FROM PROTOTYPE TO PRODUCT

**SENSOR**  
Tools for Impact Assessment

TRIAL for Environmental, Social and Economic Effects of Agricultural Land Use in European Regions

**SENSOR model linkages**

In SENSOR, the impact of policy scenarios is measured by indicators. It between the policy scenarios and the indicator computations are models. The models involved are complex and require long computation times, whereas the end-use of the impact assessment tool SAT warns present results. The strategy followed in SENSOR is capturing the reactions of key model results, required for indicator computations, to changes in a selected set of policies by response functions. In SAT, the outcomes of the response functions are used instead of the true models as inputs in the indicator computations. The response functions are empirically estimated based on the results of a large number of simulation experiments with the full model system. Understanding the estimations of SAT requires some insight into how the underlying system of models works. This is illustrated in the following figure.

**Information**  
The flow of information within the impact assessment tool is shown by the arrows in the diagram. Information flows from the input data to the response functions, which then feed into the indicator computations.

In the figure above, square boxes represent data, whereas rectangular boxes represent some form of computation. The arrows represent a flow of information. The model works in a branched chain. First NEMESIS, a macroeconomic model, solves for partial equilibrium over all sectors that are modelled. This includes making use of models for tourism (TEM), transportation (TRM) and urban land use (SUO). The total land area is split between available land, nature, transportation infrastructure, urban land, forest and agriculture.

The starting point of the information flow is the set of policy variables available in SAT (figure 1). The policy variables are the 'knobs the user can turn' in order to investigate the impact of a range of policy changes. The end points of the flow, and of interest to the policy-maker, is the set of impact indicators (figure 2). The indicator results are computed by indicator functions, which are based on policy settings, other data (not shown) and model results (figure 3). When the policy-maker or researcher is using SAT, the model results are

SENSOR Sustainability Impact Assessment

TRIAL for Environmental, Social and Economic Effects of Agricultural Land Use in European Regions

**Monetised impact valuation: Example, nitrogen surplus**

The information about potential policy-induced changes in environmental, social and economic indicators may not be enough for a complete evaluation of the policies of externalities are not accounted for. Externalities arise when the action of an economic agent affects an individual, affects the welfare of another economic agent who does not receive compensation for the suffered cost or does not pay for the enjoyed benefit. A framework has been built in the SENSOR to account for externalities. This framework is based on a simplified version of the Impact Pathway Approach (IPA) used in several EC projects (e.g. LEITEST in Africa, or framework COMPASS (2) calculating the physical impacts associated with policy-induced changes in the indicators (social, environmental), and (3) estimating in monetary terms the loss of well-being relative to these physical impacts.

We assessed the range of possible impacts associated with each sustainability indicator and the estimates of the external costs and benefits that were related to those impacts. We have related external cost and benefit estimates that were generated using stated valuation exercises in Europe or elsewhere.

An example of external costs is provided for nitrogen surplus in the soil. The externalities associated with Nitrogen surplus shows a linear relationship with the Nitrogen per region estimated within SAT, since the number of surplus flights are enabled by the agricultural land values and external costs. Since Nitrogen is associated mainly with agricultural activities and the specific cost calculated in each region, we could expect higher Nitrogen surpluses in predominantly rural areas, with Bucharest, Romania, being the striking exception. The inverse can be expected for predominantly urban areas with economies based on non-agricultural sectors.

Country	Region	Monetised impact (Million Euros)	Significant indicator	Value
Austria	Upper Austria	1.93	Healthcare	8.03
Bulgaria	North Eastern Region	6.44	Food	59.20
Bulgaria	Eastern	3.94	Healthcare	40.26
Germany	North	6.28	Agriculture	21.36
Czech-Rep	Moravia-Silesia	1.43	Healthcare	15.06
Denmark	Central	1.24	Healthcare	23.79
Denmark	Southwestern	0.99	Healthcare	14.24
France	Alsace	2.23	Healthcare	8.62
Spain	Asturias	0.28	Healthcare	20.44
France	Alsace	0.24	Healthcare	15.45
France	Southwest	0.40	Healthcare	6.00
France	Central	0.33	Healthcare	5.00
Hungary	Northwest Hungary	0.18	Healthcare	16.00
India	West	0.25	Healthcare	22.71
Ireland	North	0.27	Healthcare	24.37
Italy	Provincia Autonoma Trento	1.21	Healthcare	18.21
Lithuania	Central Lithuania	0.28	Healthcare	21.27
Germany	Northwestern	0.71	Healthcare	17.21
Spain	Madrid	0.68	Healthcare	10.68
Spain	Valencia	0.28	Healthcare	1.14
Netherlands	North	1.03	Healthcare	44.10
Poland	Central	0.87	Healthcare	44.10
Poland	South	0.22	Healthcare	19.22
Portugal	Central	1.46	Healthcare	17.46
Romania	North	0.24	Healthcare	19.24
Romania	Southwest	0.43	Healthcare	19.43
Sweden	South	0.34	Healthcare	18.34
Slovenia	South	0.14	Healthcare	18.14
Sweden	North	0.18	Healthcare	18.18
UK	North East	0.20	Healthcare	20.20

External costs in 2020 associated with the change in nitrate nitrogen surplus in agricultural land of the CAP research action (millions of Euro per region)

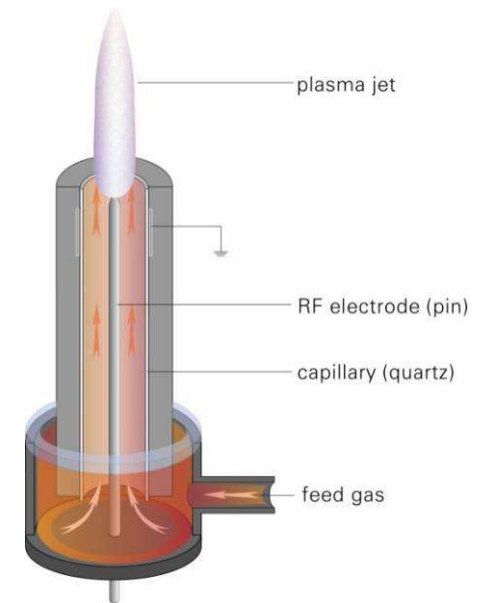
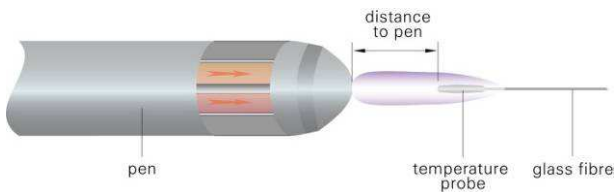
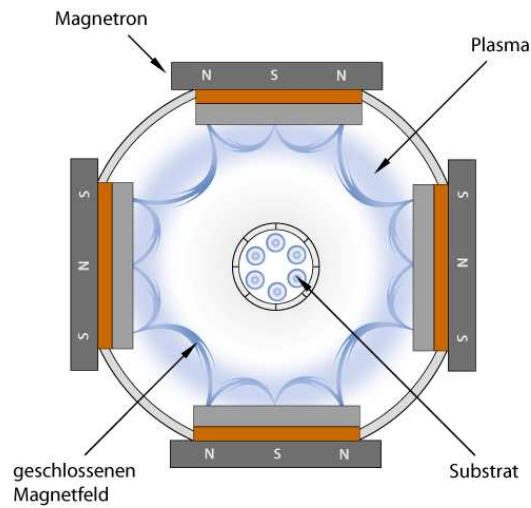
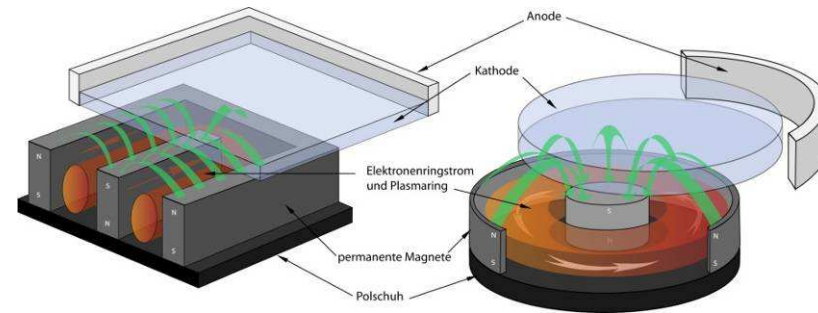
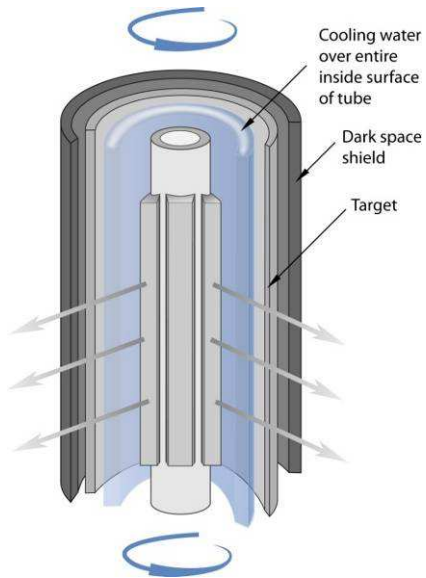
Legend: 0-200, 200-400, 400-600, 600-800, 800-1000

Map of Europe showing external costs in 2020 associated with nitrogen surplus in agricultural land of the CAP research action (millions of Euro per region).

# Technologiemarketing Bsp.



FROM PROTOTYPE TO PRODUCT



FROM PROTOTYPE TO PRODUCT

## neoplascontrol

solutions for your operations in gases and plasmas

Amtsgericht Stralsund  
Handelsregister HRB 6266  
Gegründet 2006



The logo for neoplascontrol features a stylized, flowing blue shape that resembles a leaf or a flame, with a white outline and a gradient from light to dark blue. It is positioned to the right of the neoplascontrol text.

## neoplas tools

Amtsgericht Stralsund  
Handelsregister HRB 7773  
Gegründet 2009

FROM PROTOTYPE TO PRODUCT

## Q-MACS Basic

key component,  
laser head with  
control- and supply  
unit



## Q-MACS Process

high sensitive real-  
time gas and  
plasma sensing



## Q-MACS Trace

trace gas detection  
and environmental  
monitoring



## Q-MACS Process Fibre

measurement and  
control system for  
plasma etch  
systems



FROM PROTOTYPE TO PRODUCT

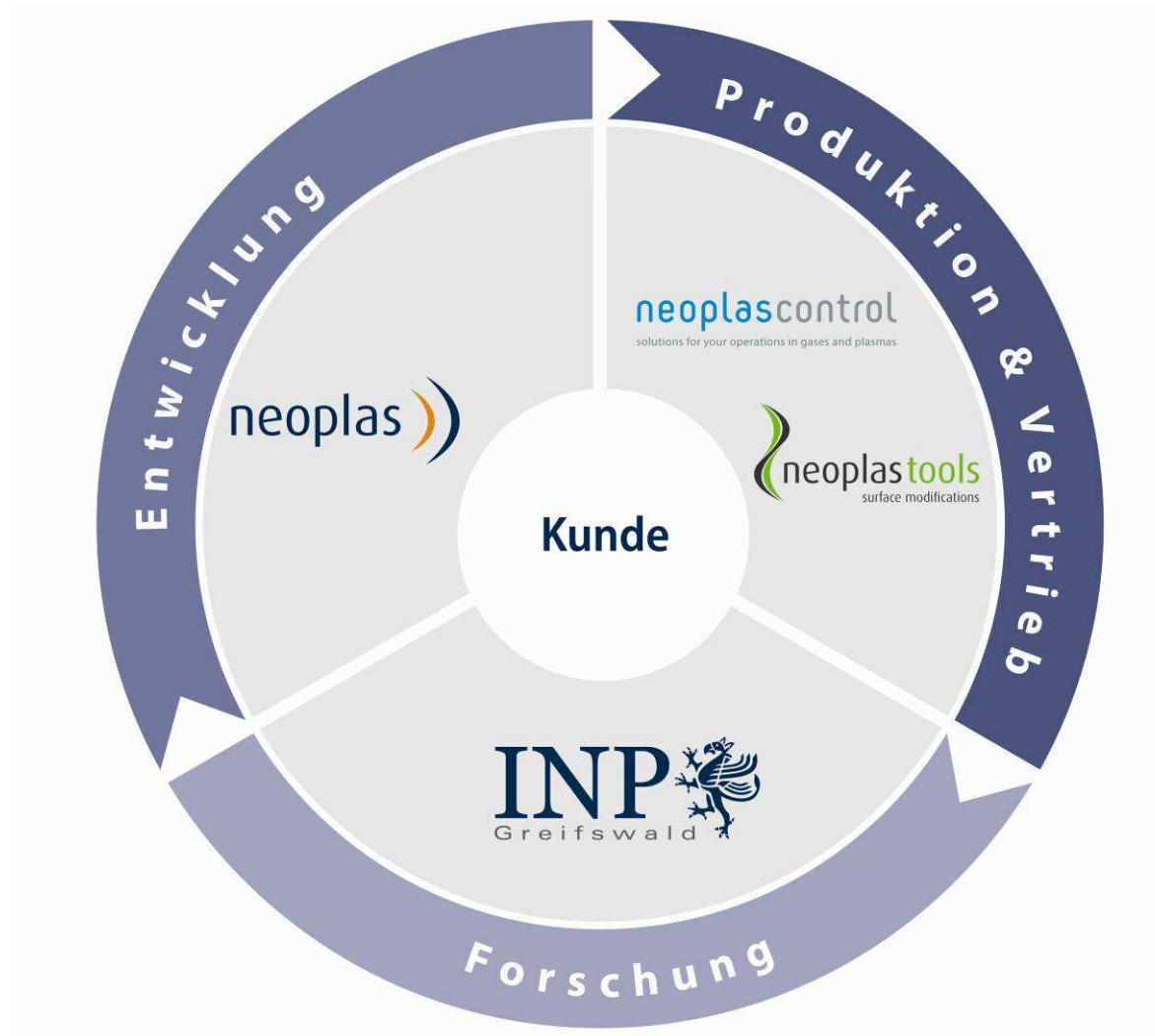
Produktion und Vertrieb von Atmosphärendruckplasmaquellen für die Oberflächenmodifizierung (CE-zertifiziert) und perspektivisch für medizinische Anwendungen (Prototypen)



# Abdeckung der Kundenwünsche



FROM PROTOTYPE TO PRODUCT





FROM PROTOTYPE TO PRODUCT

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