2016/149

AkzoNobel

Amendment to Consulting Agreement

DESCRIPTION OF THE PARTIES	
AkzoNobel	
COMPANY NAME	AkzoNobel Pulp and Performance Chemicals AB
ORGANIZATION NO.	556022-9972
ADDRESS	S-445 80 BOHUS, Sweden
CONTACT NAME	Kalle Pelin
TELEPHONE	[redacted]
FAX	[redacted]
E-MAIL	[redacted]
CONSULTANT	
(COMPANY) NAME	J. Heyrovsky Institute of Physical Chemistry
VAT NO.	CZ61388955
ADDRESS	Dolejskova 3, 18223 Prague, Czech Republic
REPRESENTATIVE NAME	Prof. Dr. Zdenek Samec
CONTACT NAME	Doc. Dr. Petr Krtil
TELEPHONE	[redacted]
FAX	[redacted]
E-MAIL	[redacted]

DESCRIPTION OF THE SCOPE OF WORK

This amendement is to prolong the Consultant Agreement valid 2 years from 1 January 2015 and to describe an extension of the previous project, amendment schedule 1.

Consultant agrees to act in the capacity of a consultant to AkzoNobel, in the field of electrochemistry regarding the chlorate and chloralkali processes, and in such capacity to render such consultation, advice and assistance ("Services") to AkzoNobel or its designee(s) as may be requested from time to time by AkzoNobel ("Purpose"). The Services include, but are not limited to, the consultation, advice and assistance described in the attached Schedule 1.1. (Decision Template: Anodic hypochlorite oxidation at DSA). In consideration of receiving Compensation, as set forth below, and other good and valuable consideration, the Parties hereby agree to the obligations herein, including the attached Terms and Conditions which form an integral part of this Agreement.

PERFORMANCE OF SERVICES

Consultant agrees to make himself/herself available to AkzoNobel for consultation, advice and assistance as set forth in Amendment Schedule 1. In his/her capacity as Consultant, Consultant will work at the request and under the direction of Nina Simic or such other person as may be designated in writing from time to time by AkzoNobel as authorized to engage Consultant's services and to generally supervise his/her work.

COMPENSATION

(a) AkzoNobel agrees to pay Consultant a fee of € 10 000 up-front to start the project. AkzoNobel also agrees to pay a fee of € 10 000 for part A of the study described in Amendment Schedule 1. AkzoNobel also agrees to pay a fee of € 10 000 for part B of the study after the complete delivery performed for AkzoNobel under this Agreement. Fees due hereunder shall be payable within thirty (30) days of receipt of Consultant's invoice.

(b) Normal, regular travel cost and expenses connected to the study described in Amendment Schedule 1 are included in the Consultant fee. However if extra costs outside the Schedule arise, AkzoNobel agrees to reimburse the Consultant for all reasonable travel and other expenses incurred upon its behalf when authorized by AkzoNobel. Such expenses shall be confirmed by appropriate receipts attached to Consultant's invoice for Services rendered and shall be submitted on a monthly basis.

EFFECTIVE DATE

EFFECTIVE DATE	January 1st, 2017
TERM	1 year from Effective Date
CONFIDENTIALITY PERIOD	The obligations herein undertaken with respect to Confidential Information received from AkzoNobel or developed under this Agreement shall remain in force at all times and survive termination or expiration of this Agreement.

GOVERNING LAW AND JURISTICTION

This Agreement shall be exclusively governed by and construed in accordance with the laws of Sweden. If a dispute has not been resolved within 45 days of a Party's written notice to the other Party of such a dispute or if senior executives appointed by the Parties fail to meet within 20 days after such notice, the Parties shall endeavour to settle the dispute by arbitration in accordance with the Arbitration Rules of the Arbitration Institute of the Stockholm Chamber of Commerce. The seat of arbitration shall be Gothenburg and the language to be used in the arbitral proceedings shall be English.

ATTACHMENTS

The Terms and Conditions is according to Consultant Agreement valid from 1 January 2015.

SIGNATURES

Signed by Executing entity	Signed by duly authorized representatives of
AkzoNobel PPC, BC Process RD&I	CONSULTANT
Signature: [redacted]	Signature: [redacted]
Name: Kalle Pelin	Name: Prof. RNDr. Zdeněk Samec, DrSc.
Position: Department Manager Process RD & I Bleaching Chemicals	Position: director
Date:	Date: 08. 11. 2016
Signed by duly authorized representatives of	
AkzoNobel [redacted]	[redacted]
Signature:	
Name: Lars Andersson	
Position: Gen. Mgr. Perf. Chem.	
Date: 2016-11-28	
Signature: [redacted]	
Name: ANNLINDHARDT	
Position: Director Sales & Marketing	
Date: 2016-11-28	

External

1. TITLE	ANODIC HYPOCHLORITE OXIDATION AT DSA
TASK / GOAL	Investigate the anodic oxidation of hypochlorite at DSA: • Experimental investigation of the influence of molybdate additive on the anodic processes. • Further analysis of the effects of soluble additives (Phosphate, carbonate and chromate) on the anodic processes in chlorate process
DECISION	
DESCRIPTION	The anodic hypochlorite oxidation is an important loss reaction in the sodium chlorate process. The mechanism of the anodic oxidation of hypochlorite at DSA has been investigated using a combination of cyclic voltammetry and differential electrochemical mass spectrometry (DEMS), which was the subject of a recent project [1]. It was concluded that the anodic hypochlorite oxidation is primarily affected by the reactions taking place in solution after the first electron transfer. The nature of the electrode material affects the hypochlorite oxidation at potentials positive to 0.8 V (vs. Ag/AgCl), the radical nature of the overall process remains, however, preserved. The effect of chromate and other additives on the anodic processes has been investigated by the same technique. However, due to the complex behaviour of most of the additives the assembled information is insufficient to rationalize the effects of additives in clearly understandable trends. Further extension of the available data and their extended analysis are needed to achieve a deeper understanding of how the additives influence the mechanism and selectivity of hypochlorite oxidation. 1. Final report - AkzoNobel project Hypochlorite oxidation 1-06/2015
Objectives:	1. Gather systematic description of the effects of additives in the hypochlorite oxidation by extending the current scope of the additives by sodium molybdate in potentiodynamic as well as potentiostatic experiments using DEMS. 2. To generalize the interplay of the buffering behavior and surface interaction of the additives by comparison of the performance of phosphate, carbonate, molybdate and chromate based additives 3. Propose scope of activities for further work. Trials in process like electrolyte : The experiments approaching full scale conditions should be perform in the following medium: NaCl: 100 g/l and $NaClO_3$: 500 g/l (Total ionic strength is about 6.0 M).
Milestones:	March 2017: Comparison between the effects of molybdate and carbonate on the selectivity (selectivity was not mentioned above, I added it but please have a look) of hypochlorite oxidation on DSA in light of previous chromate and phosphate based experiments, (Delivery A). May 2017: Presentation of generalized trends of the additive effects in the anodic chlorate process Written report and proposal for further studies (Delivery B)
SHE-aspects:	

ORGANIZATION					
Sponsor(s):	Mats Wildlock				
Responsible person:	AN PPC: Nina Simic Project leader J. Heyrovský Institute of Physical Chemistry: Petr Krtil, Senior scientist, Leader experimental study				
Project team: (Name, position, responsibility)	Elisabet Ahlberg, Professor, External expert (Univ. of Gothenburg)				
SCHEDULE/COSTS					
Start-up date:	Decmeber 2016	Calc. Costs,˙k€:		Calc. Cost, MY:	
Up-front payment :	December 2016	10			
Part A delivery:	March 2017	10			
Part B delivery:	May 2017	10			
Stop date:	**MAY 2017**	Account: **30 KEURO**			
delivery to the sponsor(s)					
Description:	**Presentations at meetings**				
Documentation:	**Reports whereof some parts will be published**				
SIGNATURES (Name, date)					
ACTIVITY START					
S [redacted] M	Responsible: Nina Simic [redacted]	18/11 - 16	Resource resp.: Petr Krtil [redacted]	18.11.2016	Stakeholder: n.a.
ACTIVITY STOP					
Sponsor: Mats Wildlock	Responsible: Nina Simic		Resource resp.: Petr Krtil		Stakeholder: n.a.

Communication process

During the course of the project regular meetings are needed to for the continuous status updates as well as part deliveries.

At the delivery meetings, a presentation of the results at a telephone/webinar meeting e.g. in the format of a power point presentation should be given.

The final delivery meeting in May 2017 should also be a face to face meeting preferably in Bohus, to present the results to a larger group.

Meeting	date	meeting location	Convener
Delivery A,	March 2017	Phone/Web	
Delivery B	May 2017	Bohus	

Reports

A written report covering the work performed in the full project should be delivered by April 30th 2017.