



# List of Publications

## Foreword

The former KBB (Kavernen Bau-und Betriebs- GmbH) and today's KBB Underground Technologies GmbH have published since 1972 more than 230 articles and papers on underground storage and associated technical disciplines.

Almost 50 % of these publications concern KBB UT's core technology: salt caverns. Some of these publications are now outdated and have therefore been removed from the directory taken over by KBB Underground Technologies GmbH.

The remaining directory of 75 articles and papers concerns up-to-date issues and is now maintained by KBB UT.

All of the articles and papers in the directory will continue to be available.

As of: December 2011

All publications are available and can be ordered from us.

Please note the code numbers of the publications you are interested in.

### **1 SALT CAVERNS**

- 1.1 Salt caverns general
- 1.2 Storage of natural gas
- 1.3 Storage of energy (compressed air and hydrogen)
- 1.4 Storage of liquid hydrocarbons

### **2 STORAGE IN POROUS FORMATIONS**

### **3 BRINE PRODUCTION**

- 3.1 Rock salt
- 3.2 Potash and special salts

### **4 GEOLOGY AND EXPLORATION**

### **5 CAVERN TECHNOLOGY**

- 5.1 Rock mechanics
- 5.2 Solution mining technology and simulation
- 5.3 Drilling and completion technology
- 5.4 Tightness tests
- 5.5 Abandonment

# 1 SALT CAVERNS

## 1.1 Salt caverns general

58.PDF	DONADEI, S.; CROTOGINO, F. (2009): Energy Storage in Salt Caverns – Today and Tomorrow <i>SMRI Fall Conference, Beijing, China, 04 - 06/09/2009</i>
57.PDF	HORVATH, P.-L. (2009): Determination of Formation Pressures in Rock Salt with Regard to Cavern Storage <i>SMRI Spring Conference, Krakau, Polen, 26 - 28/04/2009</i>
56.PDF	CROTOGINO, F. (2007): Requirements and Procedures for Testing Gas Caverns Before & After Commissioning <i>SMRI Fall Conference, Halifax, Canada, 07/10/2007</i>
01.PDF	SPRECKELS, H.; CROTOGINO, F. (2002): Salt caverns for peak shaving – reservoirs for seasonal balance? New market requirements and appropriate storage solutions <i>Proc. SMRI Fall Meeting, Bad Ischl, 06 – 09/10/2002, p.299 - 313</i>
02.PDF	HANTELMANN, G. v.; DIETZEL, H.-J.; VAUTH, R. (1999): Construction and operation of underground-storages <i>MineTime 99, Int. Congr. "Mining for Tomorrow's World", Düsseldorf, 08 -10/06/1999, p. 301 - 305</i>
03.PDF	GRÖNEFELD, P. (1998): Salz: Eine geologische Formation zur Speicherung flüssiger und gasförmiger Kohlenwasserstoffe <i>18. MINTROP-Seminar, Münster, 10 - 12/05/1998, p. 205 - 232</i>

## 1.2 Storage of natural gas

67.PDF	KEPPLINGER, J. (2011): Recent Trends in European Gas Cavern Storage – Enhancing Well Deliverability <i>11th Annual Global Gas Village Summit: The changing role of UGS within energy chain Prag, Tschechien, 11 - 13/04/2011</i>
04.PDF	GILLHAUS, A. (2007): Natural gas storage in salt caverns - Present status, developments and future trends in Europe <i>SMRI Spring Meeting 2007, Basel, 29/4 - 02/05/2007, pp. 18</i>

05.PDF	CROTOGINO, F.; KÖCKRITZ, V. (2006): Conceptual design of storage caverns for an LNG receiving terminal in Europe <i>SMRI Spring Meeting 2006, Brussels, 30/4 - 03/05/2006, p. 1 - 13</i>
06.PDF	BEUTEL, T.; BLACK, S. (2004): Salt deposits and gas cavern storage in the UK with a case study of salt exploration from Cheshire <i>SMRI Fall Conference 2004, Berlin, 03 - 06/10/2004</i>
07.PDF	CROTOGINO, F. (2003): Untertägige Erdgas-Speicherung in Europa <i>Mensch und Technik VDI / VDE Magazin</i>
01.PDF	SPRECKELS, H.; CROTOGINO, F. (2002): Salt caverns for peak shaving - reservoirs for seasonal balance? New market requirements and appropriate storage solutions <i>Proc. SMRI Fall Meeting, Bad Ischl, 06 - 09/10/2002, p.299 - 313</i>
08.PDF	BARY, A.; CROTOGINO, F.; PREVEDEL, B. u.a (2002): Storing natural gas underground <i>Schlumberger Oilfield Review Summer 2002, SMP-6122</i>
09.PDF	GRÖNEFELD, P. (1999): Almacenamiento de hidrocarburos en cavernas de sal <i>Ingenieria Quimica 31 (1999) 355, p. 95 - 104</i>
10.PDF	CARLSON, U. (1998): Die aktuelle Situation der Untertagespeicherung von Erdgas in der Welt <i>VDF Führungskraft (1998) 1/2, p. 33 - 37</i>
11.PDF	HELLBERG, C.; IVERSEN, E.-U. (1994): Construction of natural gas stores in salt formations with high insoluble fractions (Rotliegendes), exemplified by cavern Kiel 102 <i>Papers of SMRI-Fall Meeting 1994, p. 309 - 323</i> <i>Hannover, 25/09 - 01/10/1994</i>
12.PDF	BLECKER, J.; FOLTAS, F.; RÖLLEKE, F. J. (1994): Conversion of oil caverns to gas storage at the Etzel salt dome <i>Papers of SMRI-Fall Meeting 1994, p. 23 - 41</i> <i>Hannover, 25/09 - 01/10/1994 /</i> <i>Oil Gas Europ. Mag. 20 (1994) 4, p. 10 - 14</i>

13.PDF	VAUTH, R. (1994): Underground storage of natural gas (Untertagespeicherung von Erdgas) <i>Int. Natural Gas Utilization and Applications Conference and Exhibition, Istanbul, September 1994</i>
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1.3 Storage of compressed air and storage of hydrogen	
75.PDF	CROTOGINO, F. (2011): Wasserstoffspeicherung im geologischen Untergrund – Stand der Technik und Potential <i>Energiespeicher für Deutschland. Rahmenbedingungen, Geschäftsfelder und Wirtschaftlichkeit</i> <i>Cologne, Germany, 07 - 08/12/2011</i>
74.PDF	CROTOGINO, F. (2011): Wasserstoffsysteme als Energiespeicher – Technologien und Potenziale. Geotechnische Aspekte <i>Internationaler ETG-Kongress</i> <i>Würzburg, Germany, 08 - 09/11/2011</i>
73.PDF	HARTMANN, W. (2011): Wasserstoffspeicherung in Salzkavernen <i>18. Symposium "Nutzung regenerativer Energiequellen und Wasserstofftechnik"</i> <i>Stralsund, Germany, 03 - 05/11/2011</i>
72.PDF	CROTOGINO, F. (2011): Wasserstoff-Speicherung in Kavernen <i>PRO H2 Technologie Forum 2011. Wind-Wasserstoff-Systeme. Wie geht es weiter? SOLVAY GmbH, Hannover / Deutschland, 12/10/2011</i>
71.PDF	KEPPLINGER, J.; CROTOGINO, F.; DONADEI, S.; WOHLERS, M. (2011): Present Trends in Compressed Air Energy and Hydrogen Storage in Germany <i>SMRI Fall Conference, York, UK, 03 - 04/10/2011</i>
69.PDF	KEPPLINGER, J.; DONADEI, S. (2011): Large Scale Energy Storage in Geological Formations <i>6th Dubrovnik Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik / Croatia, 25 - 29/09/2011</i>
68.PDF	CROTOGINO, F. (2011): Energiespeicherung im geologischen Untergrund <i>VDI-Konferenz. Stationäre Stromspeicher für Erneuerbare Energien</i> <i>Bremen / Deutschland, 15/09/2011</i>

65.PDF	CROTOGINO, F. (2010): Large Scale Energy Storage in Geological Formations <i>Pan European Energy Storage Forum, London, UK, 20 - 22/09/2010</i>
64.PDF	BROCKMANN, B.; DONADEI, S.; CROTOGINO, F. (2010): Energy Storage in Salt Caverns – Renewable Energies in the Spotlight <i>Proceedings of the Sino-German Conference, Beijing, China, 06 - 07/06/ 2010 and The Sino-German Workshop “EOR and New Drilling Technology”, Daqing, China, 12/07/2010</i>
62.PDF	CROTOGINO, F.; DONADEI, S.; BÜNGER, U., LANDINGER, H. (2010): Large-Scale Hydrogen Underground Storage for Securing Future Energy Supplies <i>18<sup>th</sup> World Hydrogen Energy Conference 2010, Essen/Germany, 16 - 21/05/2010</i>
61.PDF	CROTOGINO, F. (2007): Compressed Air Energy Storage Caverns to Integrate Fluctuating Wind Energy within Transmission Grids in Germany <i>Sino-German Workshop: Relevant Aspects on the Underground Storage of Natural Gas and CO<sub>2</sub>, Goslar/Germany, 18 - 22/09/2007</i>
60.PDF	CROTOGINO, F.; DONADEI, S. (2009): Grid Scale Energy Storage in Salt Caverns <i>8<sup>th</sup> International Workshop on Large-Scale Integration of Wind-Power into Power Systems as well as on Transmission Networks for Offshore Wind Farms, Bremen/Germany, 14 - 15/10/2009</i>
59.PDF	CROTOGINO, F.; DONADEI, S.; DIETRICH, L. (2009): Nutzungskonkurrenz bei Speichern im geologischen Untergrund <i>Solarzeitalter, Heft 4/2009; pp. 22 - 30</i>
58.PDF	DONADEI, S.; CROTOGINO, F. (2009): Energy Storage in Salt Caverns – Today and Tomorrow <i>SMRI Fall Conference, Beijing, China, 04 - 06/09/2009</i>
55.PDF	CROTOGINO, F.; HUEBNER, S. (2009): Zukünftige Bedeutung der Energiespeicherung in Salzkavernen <i>Erdöl Erdgas Kohle, Heft 2/2009, p. 74 - 78</i>
14.PDF	CROTOGINO, F.; HUEBNER, S. (2008): Energy storage in salt caverns / Developments and concrete projects for adiabatic compressed air and for hydrogen storage <i>SMRI Spring Meeting 2008, Porto, 27/04 - 30/04/2008, pp. 179</i>

15.PDF	CROTOGINO, F.; HAMELMANN, R. (2007): Wasserstoff-Speicherung in Salzkavernen zur Glättung des Windstromangebots <i>KBB und Kompetenzzentrum für Wasserstoff- und Brennstoffzellentechnologie, FH Lübeck</i>
16.PDF	CROTOGINO, F. (2007): Compressed air energy storage caverns to integrate fluctuating wind energy within transmission grids in Germany <i>KBB Publication 2007</i>
17.PDF	CROTOGINO, F. (2006): Kavernen als Energiespeicher <i>Kali und Steinsalz - Heft 1/2006</i>
18.PDF	CROTOGINO, F.; LEONHARD, W. (2004): Compressed air energy storage plants for balancing fluctuating wind-power production <i>(English Translation KBB Publication No. 215)</i>
19.PDF	CROTOGINO, F.; LEONHARD, W. (2004): Druckluftspeicher-Gasturbinen-Kraftwerke zum Ausgleich fluktuierender Windenergie-Produktion <i>DGMK Frühjahrstag. Celle 2004</i>
20.PDF	CROTOGINO, F.; JACOBSEN, P. J.; LEONHARD, W. (2004): Compressed air energy storage (CAES) plants for balancing power demand and fluctuating wind-power production <i>SMRI Fall Meeting 2004, Berlin, 03 - 06/10/2004</i>
21.PDF	CROTOGINO, F. (2003): Druckluftspeicher-Gasturbinen-Kraftwerke zum Ausgleich fluktuierender Windenergie-Produktion <i>Herbsttagung AK Energie d. Dt. Physikal. Ges., Bad Honnef</i>
22.PDF	CROTOGINO, F. (2002): Druckluftspeicher-Gasturbinen-Kraftwerke / Geplanter Einsatz beim Ausgleich fluktuierender Windenergie-Produktion und aktuellem Strombedarf <i>Kasseler Symp. Energie-Systemtechn. ISET 2002</i>
23.PDF	CROTOGINO, F.; MOHMEYER, K.-U.; SCHARF, R. (2001): Huntorf CAES: More than 20 years of successful operation <i>SMRI Spring Meeting 2001, Orlando, 23 - 24/04/2001, pp. 351 - 357</i>
24.PDF	QUAST, P. (1987): Druckluftspeicher <i>VDI-Tagung, Köln, Nov. 1987</i>

25.PDF	<p>QUAST, P.; CROTOGINO, F. (1979):  Initial Experience with the Compressed-Air Energy Storage (CAES) –  Project of Nordwestdeutsche Kraftwerke AG (NWK) at Huntorf/ West  Germany  (Erste Erfahrungen beim Betrieb des Luftspeicherprojektes der  Nordwestdeutsche Kraftwerke AG (NWK) in Huntorf)  <i>Erdöl-Erdgas-Zeitschrift 95 (1979) 9, p.310 - 314</i></p>
26.PDF	<p>QUAST, P.; LORENZEN, H. (1979):  The Huntorf 290-MW CAES Power Plant – Design, Construction and  Commissioning of Underground Facilities  (Das 290 MW Spitzenkraftwerk Huntorf – Entwurf, Bau und  Inbetriebnahme der Unterspeicher)  <i>Erdöl-Erdgas-Zeitschrift 95 (1979) 3, p. 90 - 95</i></p>

## 1.4 Storage of liquid hydrocarbons

03.PDF	<p>GRÖNEFELD, P. (1998):  Salz: Eine geologische Formation zur Speicherung flüssiger und  gasförmiger Kohlenwasserstoffe  18. MINTROP-Seminar, Münster, 10 - 12/05/1998, p.205 - 232</p>
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## 2 STORAGE IN POROUS FORMATIONS

27.PDF	<p>SPRECKELS, H. (2002):  Optimierte Speicherentwicklungsplanung am Beispiel einer ausgeförderten  Gaslagerstätte  <i>Clausthaler Erdöl-Erdgaskolloquium „Leistungssteigerung in Erdgas-  Porenspeichern“, 11 - 12/04/2002, p.50 - 59</i></p>
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## 3 BRINE PRODUCTION

### 3.1 Rock salt

28.PDF	<p>CROTOGINO, F: (1999)  Solution mining thin salt layers for brine production and storage cavern  development  <i>SMRI Fall Meeting, Technical Class, Washington, 03 - 06/10/1999,  p. 175 - 199</i></p>
29.PDF	<p>GRÜSCHOW, N.; WEISS, M. (1999):  Possibilities and limits of solution mining of mineral salt deposits  <i>SMRI Fall Meeting, Technical Class, Washington, 03 - 06/10/1999,  p. 1 - 35</i></p>

## 3.2 Potash and special salts

30.PDF	GRÜSCHOW, N. (2001): Interpretation und Prognose von Lösungsprozessen im salinaren Gebirge <i>GGW Tagung „Aspekte der Langzeitsicherheit bei der Stilllegung von Kali- und Steinsalzbergwerken, 30 - 31/03/2001, Sondershausen</i>
31.PDF	GRÜSCHOW, N. (1998): Solution mining of thin inclining potash deposits <i>SMRI Fall Meeting, Rome, 04 - 07/10/1998, p.165 - 177</i>

## 4 GEOLOGY AND EXPLORATION

32.PDF	GILLHAUS, A. (2008): Underground salt deposits of Portugal and Spain – Geological potential to meet future demand for natural gas storage? <i>SMRI Spring Meeting 2008, Porto, 27/04 - 30/04/2008, pp. 249</i>
33.PDF	GILLHAUS, A. (2006): Bedded salt deposits throughout the world - Formation and definition in consideration of cavern design and construction <i>SMRI Spring Meeting 2006, Brussels, 03/04 - 03/5/2006, pp. 5</i>
06.PDF	BEUTEL, T.; BLACK, S. (2004): Salt deposits and gas cavern storage in the UK with a case study of salt exploration from Cheshire <i>SMRI Fall Conference 2004, Berlin, 03 - 06/10/2004</i>
34.PDF	BEUTEL, T.; BLACK, S. (2003): Geological and technical aspects of the Scottish Power gas cavern storage project in Cheshire, UK <i>SMRI Fall Meeting 2003, Chester, 05 - 08/10/2003, p.136 - 147</i>
35.PDF	HERRMANN, R. (2001): Integrierte Loginterpretation in Salzstrukturen für die Auslegung von Kavernen <i>DGMK-Frühjahrstagung 2001, Fachbereich Aufsuchung und Gewinnung, Celle, 26 - 27/04/2001</i>
36.PDF	HERRMANN, R. (2001): Integrated log interpretation in salt structures <i>SMRI Spring 2001 Technical Class, Orlando, 22/04/2001, pp.89 - 98</i>

37.PDF	FOLLE, S. (2000): Geologische Rahmenbedingungen für den Kavernenbau <i>Erdöl Erdgas Kohle 116 (2000) 11, p. 549 - 552</i>
38.PDF	FOLLE, S. (2000): Geologische Rahmenbedingungen für den Kavernenbau <i>DGMK-Frühjahrstagung 2000, Fachber. Aufsuchung u. Gewinnung, Celle, 27 - 28/04/2000</i>

## 5 CAVERN TECHNOLOGY

### 5.1 Rock mechanics

### 5.2 Solution mining technology and solution mining simulation

70.PDF	BERNHARDT, H.; BOOR, S.; MICUS, W. (2011): New Developments in the Gas First Fill Process of Natural Gas Storage Caverns <i>SMRI Fall Conference, York, UK, 03 - 04/10/2011</i>
63.PDF	BERNHARDT, H.; BOOR, S.; REEKERS, C. (2010) Practical experience with the gas lift method during the gas first fill in the Etzel cavern field and further possible applications <i>SMRI Spring Conference, Grand Junction, Colorado/USA, 26 - 27/04/2010</i>
39.PDF	GRÖNEFELD, P.; PAPE, T. (2000): Simulation of horizontal solution mining processes <i>Proc. 8th World Salt Symposium "Salt 2000", The Hague, Vol. 2, pp.1165-11</i>
28.PDF	CROTOGINO, F: (1999) Solution mining thin salt layers for brine production and storage cavern development <i>SMRI Fall Meeting, Technical Class, Washington, 03 - 06/10/99, p. 175 - 199</i>
29.PDF	GRÜSCHOW, N.; WEISS, M. (1999): Possibilities and limits of solution mining of mineral salt deposits <i>SMRI Fall Meeting, Technical Class, Washington, 03 - 06/10/1999, p. 1-35</i>
40.PDF	GRÖNEFELD, P.; SAALBACH, B. (1998): Numerical 3D simulation of horizontal leaching processes <i>SMRI Fall Meeting, Rome, 04 - 07/10/1998, p.141 - 164</i>

41.PDF	SAALBACH, B. (1997): New developments in solution mining technology <i>Proc. SMRI Spring Meeting, Krakau, 11 - 14/05/1997, p.481 - 493</i>
42.PDF	GRÜSCHOW, N.; SAALBACH, B. (1997): Soltechnische Kernuntersuchungen und Computersimulation des Solprozesses - ein Service der KBB bei der Kavernenherstellung <i>Preussag Forschung, Technik und Innovation 22 (1997), 8 S.</i>

### 5.3 Drilling and completion technology

66.PDF	WASCHER, G. (2011): Typical completions for gas and liquid storage wells <i>SMRI Spring Conference, Technical Class, Galveston, Texas/USA, 17 - 19/04/2011</i>
43.PDF	SAALBACH, B.; STEIJN, J.; BERGER, H.; ZANDER-SCHIEBENHÖFER, D. (2003): Rekomplettierung einer Erdgas-Kaverne unter atmosphärischem Druck <i>Erdöl Erdgas Kohle 119 (2003) 11, p. 408 - 410</i>
44.PDF	SAALBACH, B.; STEIJN, J.; BERGER, H.; ZANDER-SCHIEBENHÖFER, D. (2003): Recompletion of a gas storage cavern under atmospheric pressure <i>SMRI Fall Meeting, Chester, 05 - 08/10/2003, pp. 268 ff.</i>
45.PDF	ROSKI, R. (2002): Drilling and completion of gas storages in salt caverns for high gas production rates <i>Global Gas Village: UGS, A Stimulus for Market Liberalisation, Berlin 28 - 29/05/2002</i>
46.PDF	ROSKI, R. (2002): Completion alternatives for gas storage in salt caverns <i>SMRI Spring Meeting, Banff, 28/04 - 01/05/2002</i>
47.PDF	GRÖNEFELD, P. (2000): Well construction and completion <i>SMRI Spring 2000 Technical Class, The Hague, 07/05/2000, p.44 - 59</i>

## 5.4 Tightness tests

48.PDF	BOOR, S.; HÜBNER, S.; SCHWEINSBERG, H.-J.; TRYLLER, H. von (2007): Practical experience with mechanical integrity tests using the new SoMIT method in the Etzel cavern field <i>SMRI Spring Meeting 2007, Basel, 29/4 - 02/05/2007</i>
49.PDF	BOOR, S.; HÜBNER, S.; SCHWEINSBERG, H.-J.; TRYLLER, H. von (2007): Praktische Erfahrungen mit Gasdichtheits tests nach dem neuen SoMIT-Verfahren im Kavernenfeld Etzel <i>DGMK/ÖGEW Frühjahrstagung 2007, Celle</i>
50.PDF	BOOR, S.; HÜBNER, S.; SCHWEINSBERG, H.-J.; TRYLLER, H. von (2007): Praktische Erfahrungen mit Gasdichtheits tests nach dem neuen SoMIT-Verfahren im Kavernenfeld Etzel <i>Erdöl Erdgas Kohle 123 (2007) 11</i>
51.PDF	BOOR, S.; REITZE, A.; SCHWEINSBERG, H.-J. (2007): Experience with MITs using the SoMIT method before commissioning <i>SMRI Fall Meeting 2007, Halifax, 07/10/2007</i>
52.PDF	TRYLLER, H. von; REITZE, A.; CROTOGINO, F. (2004): New approach to determine interface level during MITs – High accuracy and no need for radioactive tool <i>SMRI Spring Meeting 2004, Wichita, 18 - 21/4/2007</i>
53.PDF	GROSSWIG, S.; HURTIG, E.; VOGEL, B.; CROTOGINO, F.; SCHÖNEBECK, J.; RIEKENBERG, R.; GRÖNEFELD, P.; TRYLLER, H. von (2003): Mechanical integrity testing using the fibre optic temperature sensing technique <i>SMRI Fall Meeting, Chester, 05 - 08/10/2003, pp. 148 - 163</i>

## 5.5 Abandonment

54.PDF	CROTOGINO, F.; KEPPLINGER, J. (2006): Cavern well abandonment techniques guidelines manual <i>SMRI Research Project Report No. 2006-3-SMRI</i> <i>SMRI Spring Meeting 2006, Brussels, 30/4 - 03/05/2006</i>
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