

Exploration Country Focus: Austria*

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Search and Discovery Article #10138 (2007)

Posted October 25, 2007

*Reprinted, with some modification in format, from AAPG European Region Newsletter, September 2007, v.2 (<http://www.aapg.org/europe/newsletters/index.cfm>), p. 4-6, with kind permission of the author and AAPG European Region Newsletter, Hugo Matias, Editor (hmatias@repsolypf.com)

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Overview

Austria's geological landscape is largely dominated by the Alps which top 3800 m in the central part. The Eastern Alps extend 500 km from the Rhine River in the west to Vienna in the east. They then extend farther to the Carpathians. This latter continuation is, however, buried under Miocene and Pliocene sediments of the Vienna Basin.

The young Neogene basins to the north and east of the Alps (Figure 1) have a successful track record of E&P activities of more than 70 years and are still of economic interest today.

The first commercial oil production started at around 1860 from the Flysch zone in Galicia (now Carpathian region in Poland and Ukraine, some 500 km NNE of Vienna). By the early 20th century, the Austrian-Hungarian Empire was the third largest oil producer in the world (behind the USA and Russia), with a peak production of 2.1 million tons in 1909.

From 1892 until the late 1920's, shallow gas production in the city of Wels in Upper Austria was used for public lighting and home heating. However, the modern Austrian oil and gas industry started with the 'Gösting 2' oil discovery in 1934 in the northern Vienna Basin. This is still the heartland of Austria's oil production and home of Austria's only giant oil field – 'Matzen' (discovered in 1949; ultimate recoverable ~ 800 million barrels of oil; for location see Figure 2).

By international standards Austria is a rather small producer. Field sizes are generally small to very small with only a few larger exceptions. Focused efforts to improve operations efficiency and management of investments and costs have been essential in carrying on exploration and production work, particularly in years of low price scenarios. This and the existing infrastructure plus the vicinity to the end consumers have allowed the local players to run their business profitably for many years.

Austria's concession system (Figure 2) is characterized by its stability – the two active companies dominate their core areas (OMV – Vienna Basin; RAG – Molasse Basin) with minor interests in the other areas.

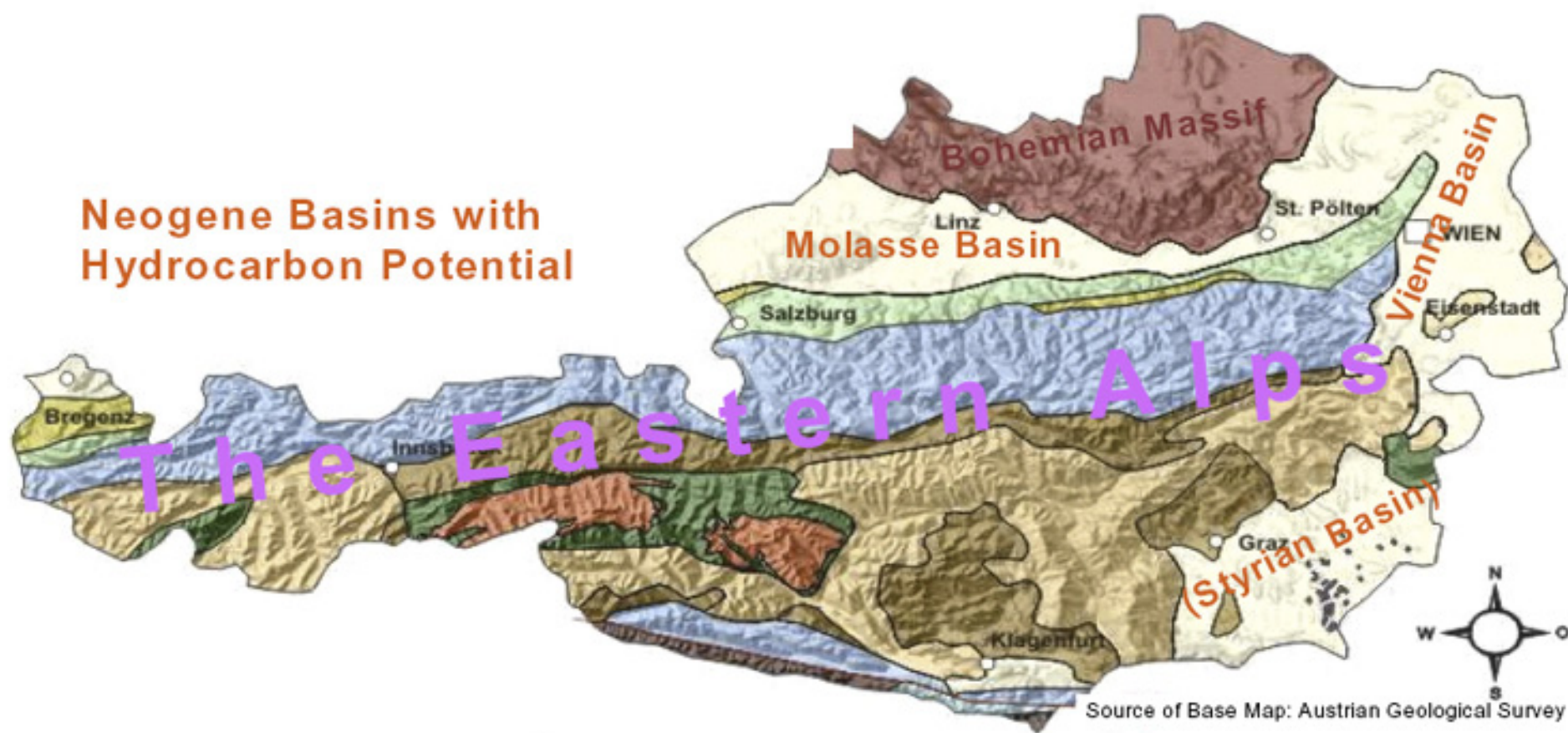


Figure 1. Schematic geology of Austria.

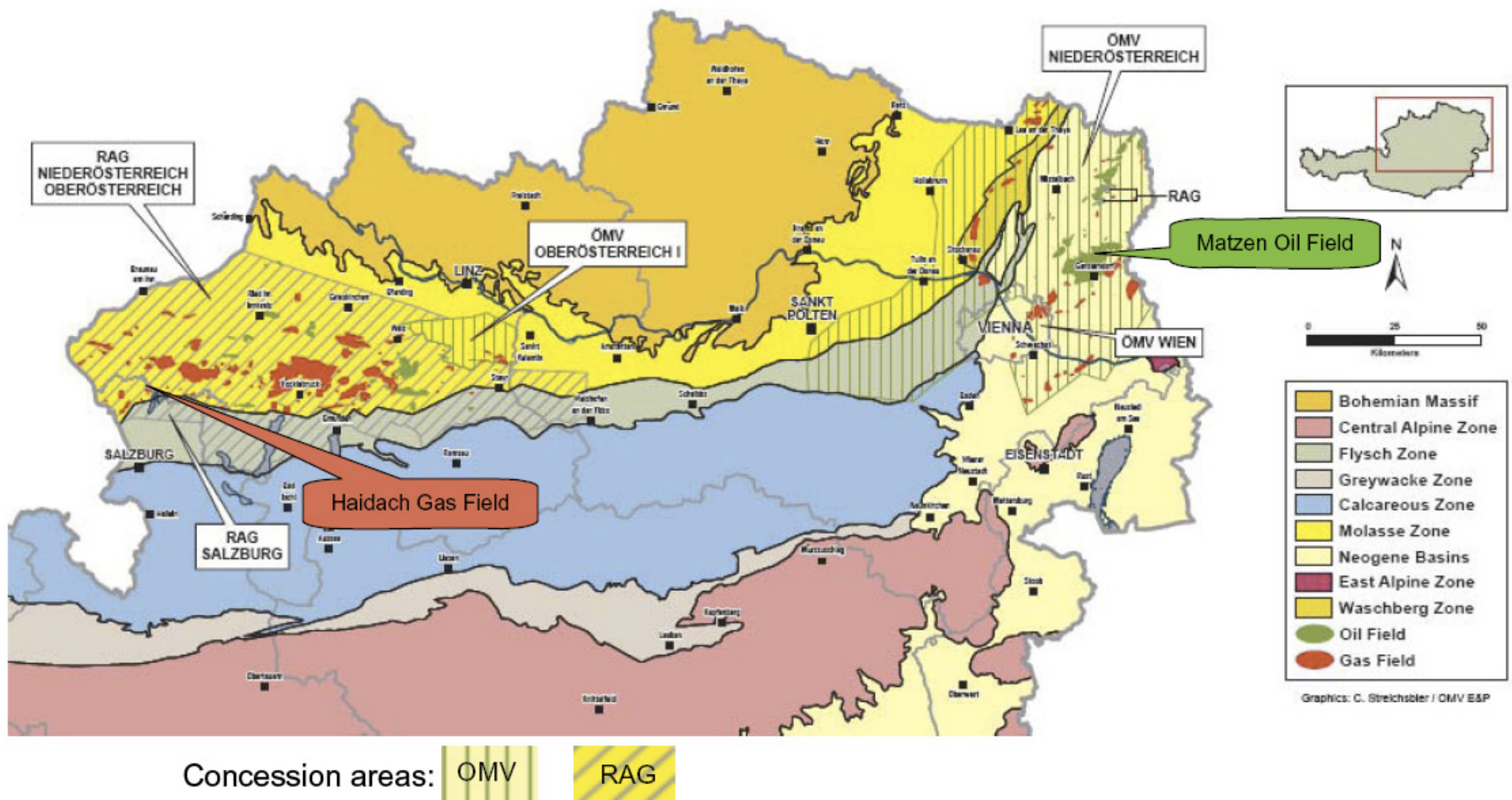


Figure 2. Concessions and oil/gas fields.

Petroleum Systems

Domestic production comes from two mature oil and gas provinces: the Vienna Basin and the Molasse Basin (Table 1). Exploration work in the Styrian Basin was terminated in the mid 90's as no economic hydrocarbons have been found there.

Vienna Basin

It is a young intramontane basin at the boundary of the Alps and the Carpathians. The Vienna Basin comprises three plays (Figure 3, upper section). The first play is the Neogene basin fill holding the majority of individual and mostly multi-horizon oil/gas fields, including the Matzen field. The second play consists of the allochthonous Alpine-Carpathian nappe system below the Neogene sediments, with oil and gas from reservoirs in the Calcareous Alps (e.g., Schönkirchen ÜT, Strasshof). The last play is the autochthonous basement and its Mesozoic cover and the Tertiary Molasse below the nappes. Plays 1 and 2 have been most important for the oil and gas E&P. Play 3 has been tested by only 4 wells so far. None of them encountered commercial hydrocarbons; however, Zistersdorf ÜT 1 experienced a significant gas kick from Malmian limestones at a depth of 7544 m.

Molasse Basin

This basin covers the area north of, and partly underneath, the Alpine ranges and consists of an Eocene to Pliocene sequence of shales, sandstones, and conglomerates (Figure 3). This is underlain by the autochthonous Mesozoic, primarily Upper Jurassic and Upper Cretaceous. Oligocene and Miocene gas is of bacterial origin, while the gas and oil in the Eocene and Cretaceous originate from a common thermal source.

Although no commercial HC accumulations have been found there so far, the Flysch and Calcareous Alps, thrust over the Molasse, as well as their autochthonous subcrop are considered as potential exploration targets.

Styrian Basin

This is a westernmost extension of the Pannonian Basin in SE Austria (see Figure 1). Past activities in the Styrian Basin resulted in a number of dry holes, some of them with gas and occasionally also oil shows in the Miocene target horizons. Absence of adequate lateral and vertical seal is seen as the main reason for the lack of HC accumulations in (at least) these prospects.

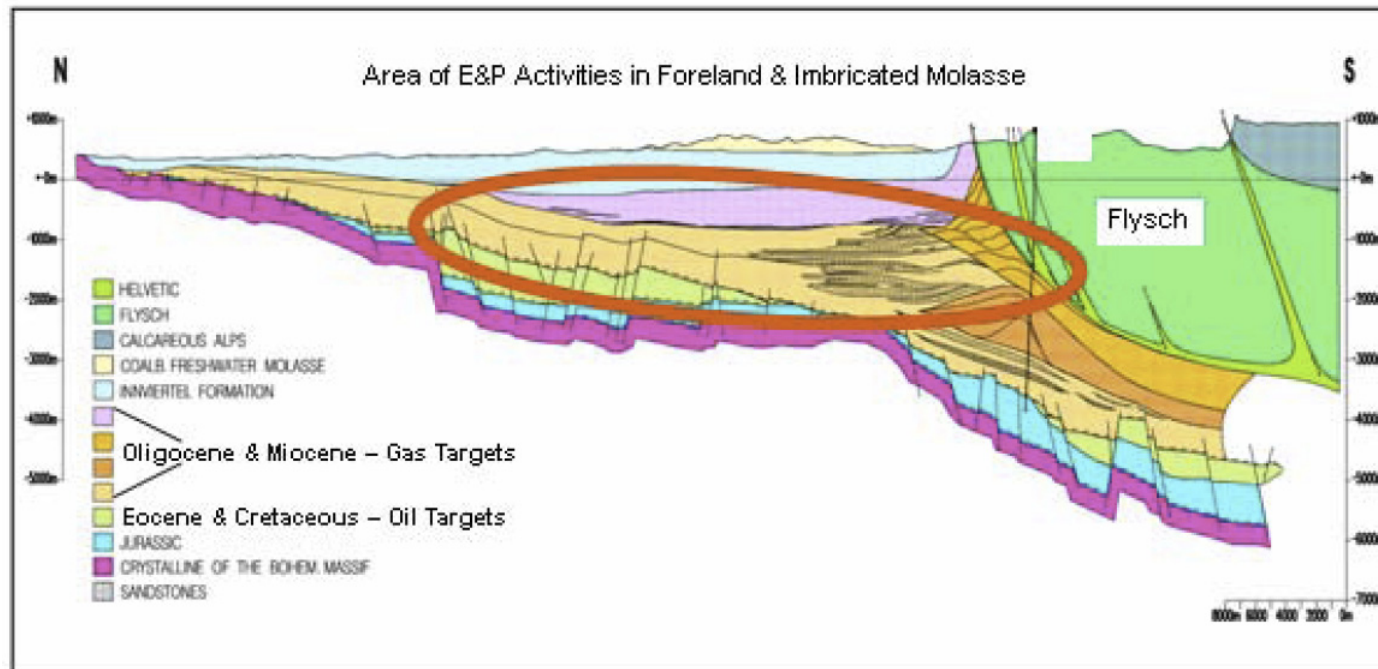
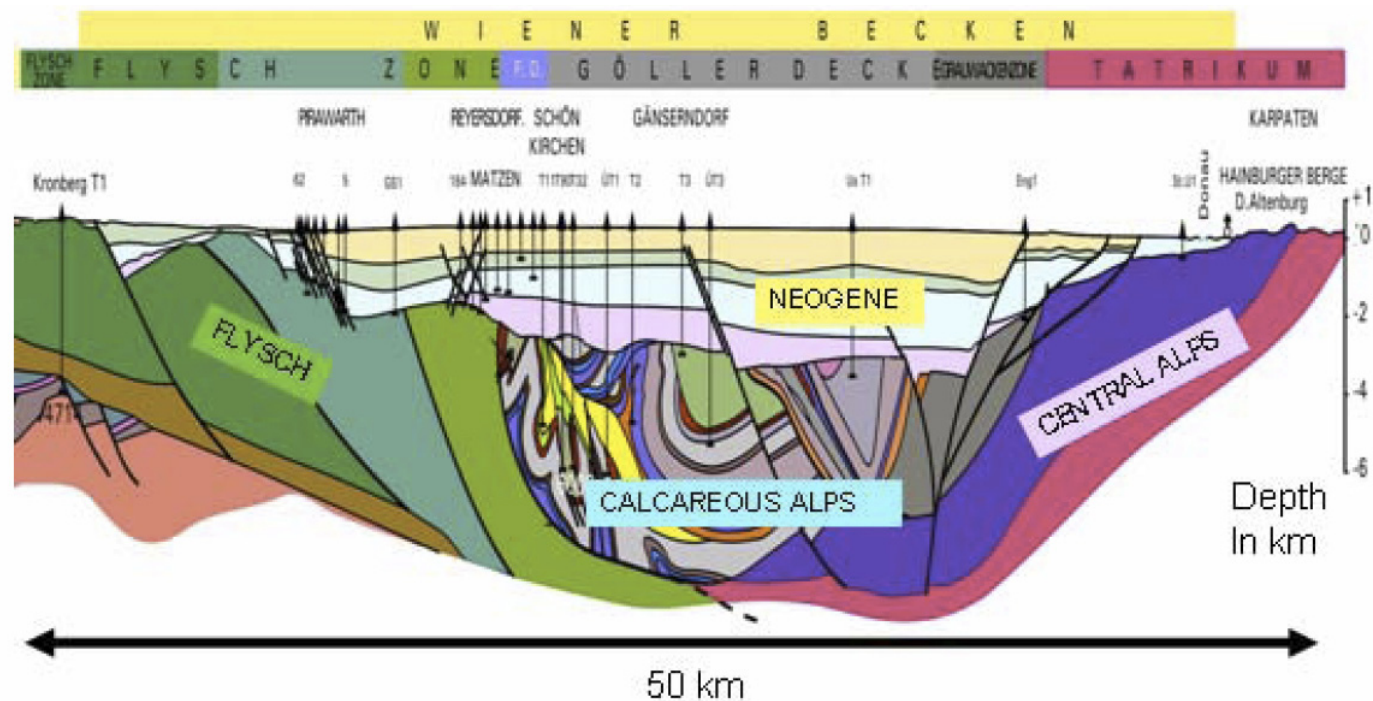


Figure 3. Schematic sections across the Vienna Basin (A-A') and the Molasse Basin (B-B').

	Cum. Prod. Until End 2006				Annual Production 2006			
	Oil		Gas		Oil		Gas	
	MMbbl	Mmtons	bcf	bcm	MMbbl	Mmtons	bcf	bcm
Vienna Basin								
Oil	821	112			5.8	0.795		
Gas			2,100	60			42.3	1.2
Molasse Basin								
Oil	73	10			2.5	0.062		
Gas			800	23			21.2	0.6
Austria Total								
Oil	894	122			6.3	0.857		
Gas			2,900	83			63.5	1.8
Total Reserves by End 2006								
Oil	73.3	10						
Gas			1,100	30				

Table 1. Austrian production data and reserves.

Recent Exploration Successes and Outlook

In both classical E&P areas, the Molasse and the Vienna Basin, continuous exploration is still conducted. The most significant discoveries during the last 10 years are the Haidach gas field (Figure 2) in the Oligocene of the Molasse (depth: 1600 m; ultimate recovery ~ 4 bcm/141 bcf) converted to an underground gas storage with a turnover volume of 2.4 bcm/85 bcf) and the Strasshof sour gas field with two reservoirs in the Calcareous Alps underneath the Vienna Basin (depths: ~ 3200 and 4300 meters; not yet on stream – expected ultimate recovery 4+ bcm). One of the largest recently made oil discoveries is RAG's Hiersdorf field in the Eocene of the Molasse (depth: ~ 2400 m; expected ultimate recovery is some 250,000 tons of oil [= 1.8 MMbbl]).

Current exploration targets for gas are 'Haidach look-alikes' along the south rim of the Molasse and the Calcareous Alps underneath the Vienna Basin. Oil opportunities are pursued across the Neogene of the Vienna Basin and in selected areas of the Molasse Basin.

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Oil companies pursuing E&P activities in Austria: OMV (www.omv.com)

Rohöl-Aufsuchungs AG (RAG) (www.rohoel.at)